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MINISTER'S MESSAGE

To His Honour,
The Honourable David C. Lam,
Lieutenant Governor of the
Province of British Columbia.

May It Please Your Honour:

I am pleased to submit the Annual Report of the Ministry of Transportation and Highways for the period of April 1, 1990 to March 31, 1991.

I was appointed Minister of Transportation and Highways in October 1991 and look forward to providing a service-oriented, environment friendly transportation system for the people of British Columbia and a new direction for transportation in the next century.

Art Charbonneau
Minister of Transportation and Highways

DEPUTY MINISTER'S MESSAGE

Art Charbonneau
Minister of Transportation and Highways,
Parliament Buildings,
Victoria, B.C.

Sir:

We have the honour to submit the Annual Report for the fiscal period ending March 31, 1991.

Respectfully submitted,

M.V. Collins,
Deputy Minister

B.R. McKeown,
Assistant Deputy Minister
Planning and Major Projects

G.S. Hogg,
Assistant Deputy Minister,
Administrative Services

D.P. Doyle,
Assistant Deputy Minister
Highways Operations

A LOOK INTO THE FUTURE

M.V. Collins, Deputy Minister

From the Deputy Minister

In this, our second year since reorganization and decentralization, we again stressed the importance of increased service and accountability.

Today we recognize that our standard of living depends on our natural and human resources, and protecting these resources has become important to us in everything we do. We must look at all options and consider other types of transportation besides roads.

When we plan a project, we involve not only biologists, naturalists, hydrologists, and others, but also the general public.

In 1991/92 we plan to:

- Strengthen our commitment to improve all modes of transport and focus on how best to move people and goods.
- Continue to work with other agencies to promote transit, carpooling and other transportation methods.
- Increase our efforts to work with municipalities and regional districts to make transportation a part of community planning.
- Concentrate more resources on renewing roads and bridges to protect our investment.
- Protect the integrity of our transportation system in areas prone to earthquakes.
- Continue to identify environment-friendly and cost-effective methods of building and maintaining our highway system.
- Introduce Project Management policies and procedures so that all projects, big and small, will be managed to a given standard and in the most cost-effective manner.
- Introduce measures to get the best lifetime cost when deciding, for example, if continued maintenance on a road or rebuilding would cost less over the lifetime of that road.
- Implement a Project Cost Estimating System to improve cost estimating.
- Encourage staff at all levels to develop and put into effect ideas to improve efficiency and effectiveness of operations.

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MISSION STATEMENT AND OBJECTIVES

Mission Statement

The goal of this Ministry is to provide and maintain safe and efficient movement of people and resources on a multi-modal provincial transportation network in conjunction with the economic development of the province and in a socially and environmentally acceptable manner.

Objectives

- To plan, construct, operate, and maintain a safe and effective multi-modal provincial transportation network that will provide the freedom to move into the twenty-first century.
- To facilitate economic and social development of the province and every region within the province with social and environmental sensitivity.
- To coordinate responsible provincial transportation policy and legislation with other agencies and levels of government.
- To respond promptly to emergencies and disasters.
- To communicate with the public with regard to ministry activities.
- To promote high-quality service to the public among staff.

This fiscal year is remembered for its extremes in weather. Torrential rains caused severe flooding around the province in June and a landslide that blocked the Sea-to-Sky route in the Lower Mainland for three weeks in October and November. Snow and avalanche hazards also increased due to severe winter conditions.

These events tested the operations of the ministry and resulted in the review of winter maintenance standards and the development of more effective external communications guidelines during emergencies.

Other highlights include:

- April 3, 1990, the first road project to focus on moving people not cars was announced—the Barnet/Hastings People-Moving project.
- May 3, 1990, the first-ever Provincial Transportation Plan was announced.
- May 11, 1990, the largest contract for road construction in B.C. was awarded for construction of the Cassiar Connector in Vancouver.
- June 5, 1990, the ministry filed an intervention with the National Transportation Agency of Canada as a result of an application by Canadian Pacific Limited to abandon a portion of the CP Rail line between Robson West and Midway in the Kootenays Region.
- August 9, 1990, a Provincial Ports Policy was announced.
- August 17, 1990, the new Needles Ferry was launched, the largest of several projects to improve service on all Arrow Lake ferry routes in the Kootenays.
- September 17, 1990, a campaign to encourage transit and carpool use in the Lower Mainland—Go Green— was launched with B.C. Transit, the Greater Vancouver Regional District and Environment Canada.

- October 1, 1990, the Okanagan Connector was completed one year ahead of schedule and within the original budget of $225 million (1987 dollars).
- October, 1990, Nanaimo City Council and the ministry agreed on the Nanaimo Inner Route as a component of the Vancouver Island Highway Project.
- November 3, 1990, five kilometres of CN Rail property in Victoria, purchased by the government of B.C. in 1990, together with 90 kilometres from the Duncan area into Victoria purchased in 1985, was proclaimed as a corridor for future transportation needs.
- November 16, 1990, the final phase of the Fraser River Crossing and Connections major project in the Lower Mainland was announced—construction of three interchanges.
- January 21, 1991, Northland Road Services (Quesnel) Ltd. lost its road and bridge maintenance contract in the North Cariboo service area due to the contractor's inability to fulfill service requirements of the contract.
- February 6, 1991, construction of emergency ferry docking facilities at Porteau Cove was announced which would serve Sea-to-Sky Highway users from Squamish to Horseshoe Bay if the route should be blocked.
- February 11, 1991, the ministry and B.C. Transit announced a $1.3 million plan to encourage alternate transportation for South Surrey commuters: a new 250 car park-and-ride and five park-and-pool lots along the King George Highway corridor.
- February 20, 1991, the first calls for initial proposals were advertised for the new road and bridge maintenance contracts to be negotiated through the summer.
- March 7, 1991, the use of the Sea Bus Terminal in Vancouver was approved for a fast, passenger-only ferry service to Gibsons and Bowen Island.
- March 20, 1991, the ministry announced its decision to accept recommendations from a newly-elected Nanaimo Council to change the alignment of the Nanaimo inner-route section of the Vancouver Island Highway Project.

MINISTRY ORGANIZATION

The Ministry of Transportation and Highways not only plans, builds and maintains the provincial highway system but also coordinates with other provincial bodies involved in providing transportation in British Columbia.

Ministry staff work with the Crown Corporations involved in transportation all of which report to the Minister of Transportation and Highways:

- British Columbia Ferry Corporation;
- BC Rail Ltd.; and
- B.C. Transit.

Though Crown Corporations support their own operations, the Ministry of Transportation and Highways contributes with both operating and capital grants.

The Legislative Acts The ministry is also responsible for ensuring that a number of Legislative Acts or sections thereof are complied with:

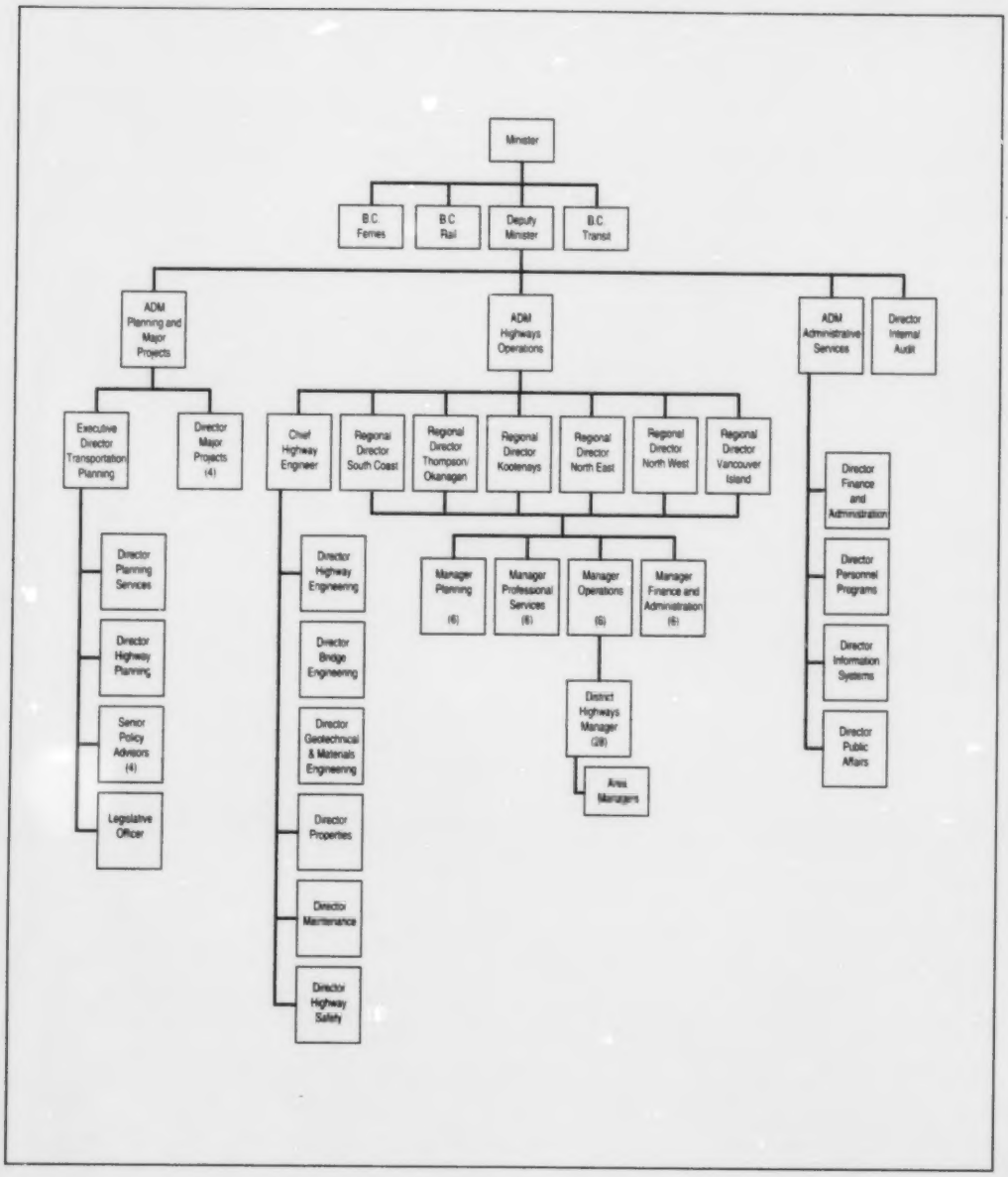
- Ministry of Transportation and Highways Act — this Act sets out the transportation and highways mandate of the ministry.
- Highway Act — this Act governs the construction, maintenance, classification and protection of the public highways in the province, including bridges and tunnels.
- Other Acts:
  British Columbia Railway Act
  British Columbia Transit Act (as of Nov. 1/89)
  Coquihalla Highway Construction Acceleration Act
  Ferry Act
  Ferry Corporation Act
  Highway (Industrial) Act
  Highway Scenic Improvement Act
  Metro Transit Operating Company Act (as of Nov. 1/89)
  Pipeline Act — (Transferred to Ministry of Municipal Affairs, Recreation and Culture September 15, 1990)
  Provincial Rapid Transit Subsidy Act (as of Nov. 1/89)
  Railway Act
  Riverbank Protection Act
  Transport of Dangerous Goods Act — (Transferred to Ministry of Solicitor General February 8, 1990)

Ministry Structure The Ministry of Transportation and Highways has 2348 full-time employees authorized in headquarters at Victoria, in six highways regional offices and 28 districts.

- District staff perform the line tasks in the field, overseeing contract and maintenance work and the general condition of the provincial highway network in the area. Development approvals are also managed by district staff.
- Region staff are responsible for ensuring safe and efficient highways within their region as well as working with municipal governments and regional districts to plan and manage regional highways initiatives. The rehabilitation program is also established at the regional level.
- Headquarters staff lead the ministry on matters of policy, standards, highways operations, planning and finance. They also provide support to region and district staff in above areas as well as professional services. They are responsible for ensuring an efficient and effective overall provincial transportation system.

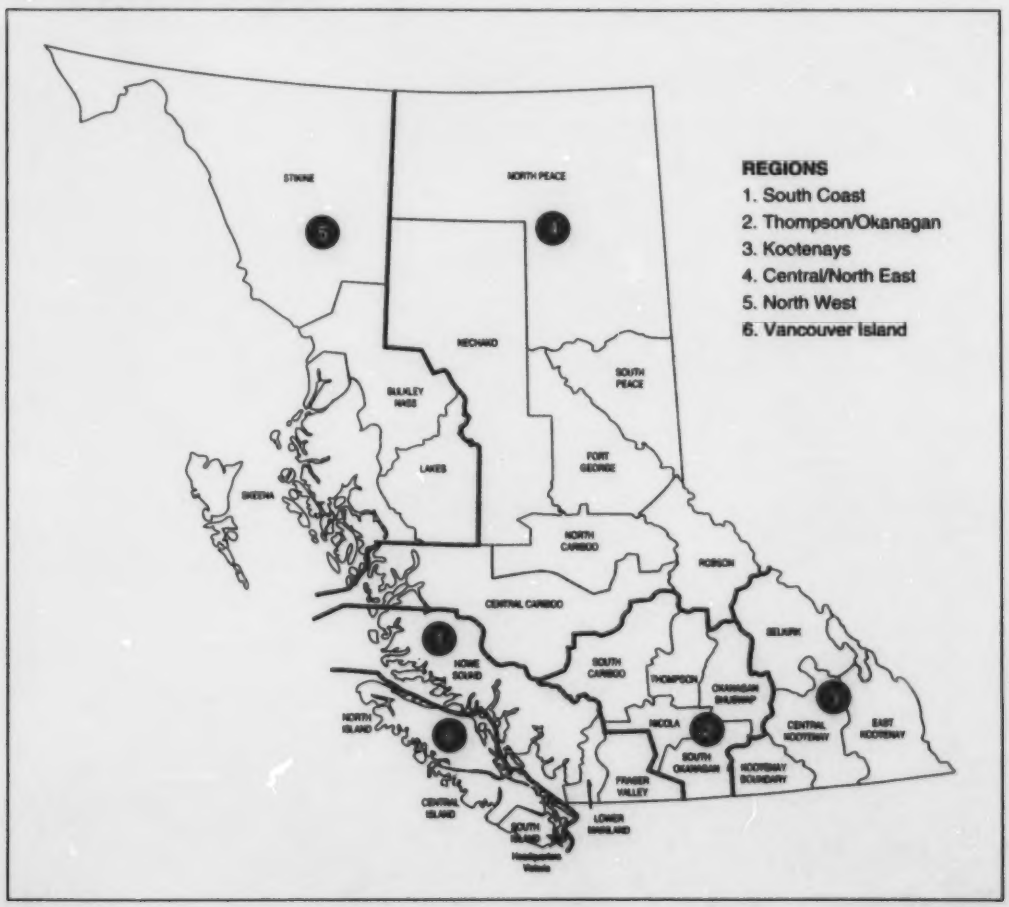
All major projects having a capital cost over $50 million are generally managed by headquarters staff.

Ministry Organization



The British Columbia Highway System	1989/90	1990/91
Total kilometres of road open	42,105	42,450
Total kilometres of paved road	21,904	22,053
Total kilometres of unpaved road	21,388	21,584
Total number of bridges	2,706	2,715
Total length of bridges in metres	126,344	131,307

The Highways Districts and Regions



IMPROVING SERVICE AND ACCOUNTABILITY

Service to the public starts with an organization of qualified and trained staff to meet the needs of our clients. Suggestions and innovations from employees resulted in a number of increased services and accountability to the public.

Reorganization/Decentralization Defining staff requirements, recruiting and training staff were priorities for the year.

- District staff now have authority for decisions in all district functions.
- Over 500 staff appointments were made; 159 were new to the organization, the remainder were transfers or promotions from within.
- Development of a new management development program — Excel — was completed and more than 500 employees received training in project management, contract supervision and information technology.
- An "Organizational Health" study was conducted. As a result the ministry worked with employees to address issues of workload, recognition, wellness, office environment, training and communication. This proved effective in rebuilding the organization.

Service Excellence Service Excellence began in January 1990, through the government initiative, Service Quality B.C., to seek improvements in the ministry for service to the public and management of human and financial resources. It was introduced as a pilot project in six District offices: Fraser Valley, South Okanagan, Selkirk, North Peace, Bulkley-Nass and Central Island.

Staff were to identify customer groups, find out customers' needs, and streamline procedures that hinder excellent customer service. As a result, initiatives that improve service were put in place in many offices, such as:

- The North West Region office now has a system to record and track customer concerns that ensures that every inquiry is followed up.
- District bank accounts now allow local suppliers to receive immediate payment of invoices. Historically, all invoices were sent to Victoria where delays of 60 days were not uncommon.

FMIS — Financial Accountability The MacKay report recommended that the ministry improve its financial reporting and financial information systems. In 1989, three systems were evaluated and FMIS (Financial Management Information System) was selected to address financial management information needs and improve management of taxpayers dollars. The system also allows the ministry to measure timeliness in paying suppliers.

Financial management is now decentralized, in keeping with the ministry's goal of giving more responsibility to the regions and districts.

Internal Audit Department This Branch performs audits to assist senior management to manage and control resources efficiently and economically. It audits headquarters and regional financial areas, such as asset and expenditure controls and contract administration, as well as highways operations.

The objective of the Internal Audit Department (IAD) is to serve the public through providing recommendations for improved:

- Efficiency
- Economy
- Effectiveness

During 1990/91 the IAD was responsible for issuing reports for five District Offices, three headquarters Branches, five Ministry Operations, and one Federal/Provincial Claim.

IAD also conducted four special assignments including privatized operations and follow-up on ministry requests and coordinated audits of compliance with certain provisions of the Road and Bridge Maintenance Contracts.

RISP Registration, Identification, Selection and Performance Evaluation (RISP) is a computerized system that gives fair access to ministry business by engineering technical firms around the province. A firm's selection is based on technical information and estimated costs provided in the bid.

This fiscal year, engineering firms worked on 180 projects for an estimated value of $26,111,535.

Hired Equipment The Hired Equipment policy, to provide fair access to ministry business for road building equipment owners, was reviewed. Improvements will be made next year to improve the fairness of the policy including:

- Hiring equipment older than 20 years with a valid commercial vehicle inspection certificate, and
- Road and bridge maintenance contractors may list their equipment only on the open list.

Toll-Free Telephone Line The provincial toll free and Vancouver 24 hour road report telephone lines proved extremely popular through the winter months with an excess of 180,000 callers per month using the service. As a result:

- Local lines were added in Whistler (938-4997) and Abbotsford (855-4997),
- Calling capacity on the toll-free line was increased 30 per cent,
- B.C. Cellular and Cantel offered free access to the report for giving air-time changes to their customers (Cellular callers dial *HWYS), and
- Discussions began with B.C. Tel for a user-pay data base for on-line viewing of road condition reports scheduled to begin summer 1991.

Further local numbers will be added around the province to free the toll-free number for easier access during extreme weather conditions.

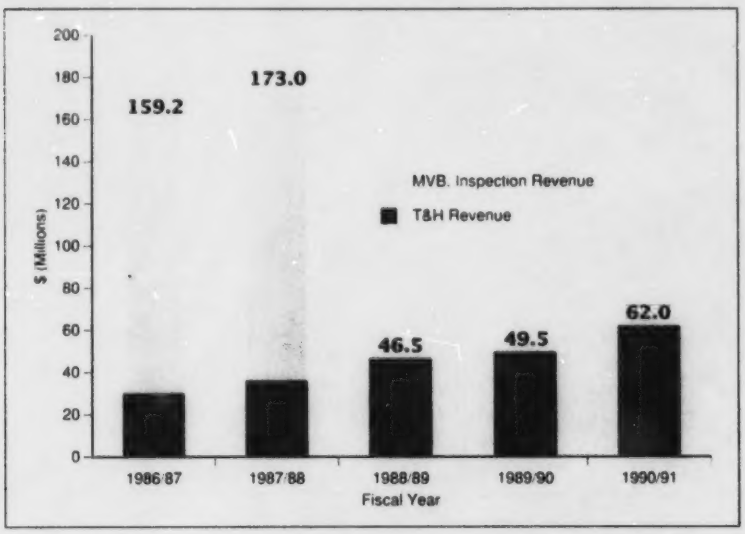
DAS System A prototype computerized logging/tracking system — the Development Approval System — was implemented in the regions. Benefits include:

- Increased staff efficiency,
- Less time required to answer enquiries making more time available for inspections, and evaluations,
- More consistent application evaluations and reduced turnaround times (financial savings to developers will be realized through a reduction in bank carrying charges due to the improved turnaround), and
- Less space required for on-site file storage.

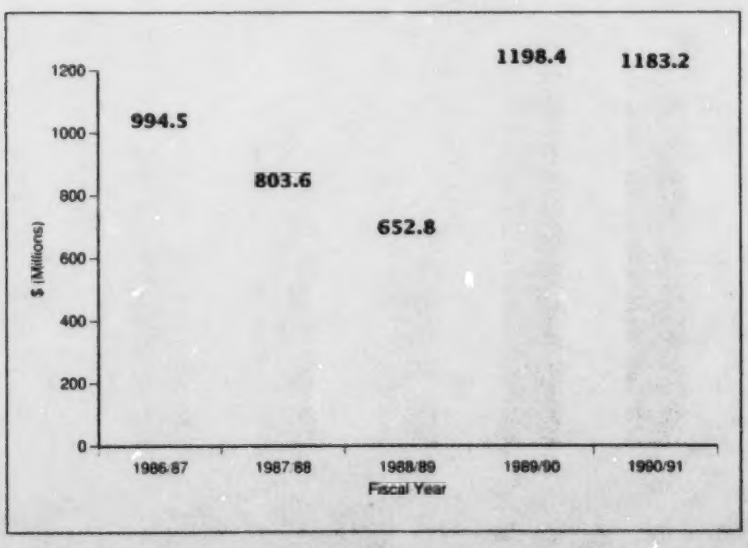
FINANCIAL STATEMENTS — SUMMARY OF EXPENDITURES 1990/91

This report compares revenues and expenditures of the Ministry of Transportation and Highways, for the last five fiscal years, and details expenditures for the fiscal year ended March 31, 1991 by appropriation, by responsibility centre and by electoral district.

Total Revenue
5 Year Comparison
(Unaudited)

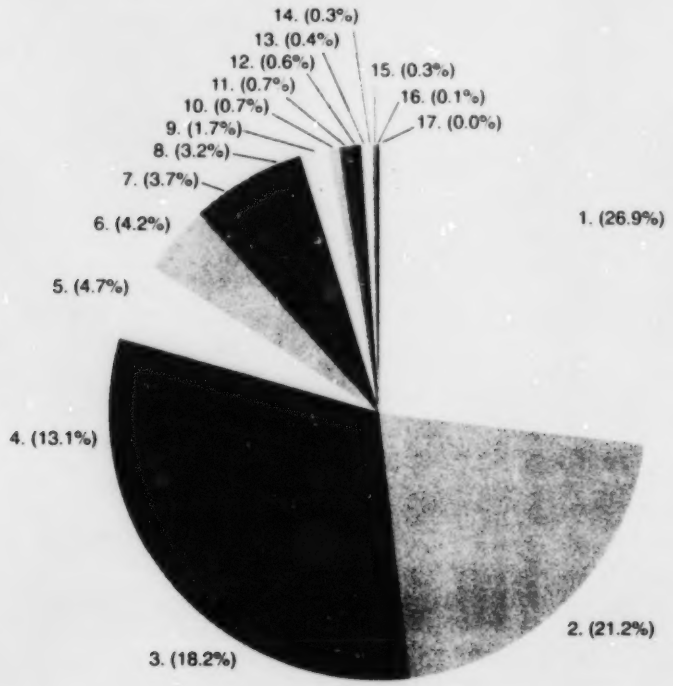


Total Voted Expenditures
5 Year Comparison
(Unaudited)



Note: Motor Vehicle licence revenue transferred to Ministry of Solicitor General. Engineering Inspection revenue transferred to Ministry of Municipal Affairs, Recreation and Culture.

How the Transportation and Highway's Dollar was Spent, Fiscal 1990/91 (Unaudited)



1.	Highway Maintenance	318,150,157	26.9%
2.	Minor Highway Capital Construction	251,486,671	21.2%
3.	Contributions to the British Columbia Transit Authority	216,089,160	18.2%
4.	Highway Rehabilitation	154,932,596	13.1%
5.	Administration and Support Services (Including Minister's Office)	55,229,321	4.7%
6.	Vancouver Island Highway	50,036,985	4.2%
7.	Okanagan Connector	43,856,800	3.7%
8.	Cassiar Connector	38,171,611	3.2%
9.	Highway 97 – Okanagan	19,682,625	1.7%
10.	Contributions to the British Columbia Railway Company	8,038,480	0.7%
11.	Barnet/Hastings Corridor	7,722,508	0.7%
12.	Sea-to-Sky Highway	6,911,593	0.6%
13.	Contributions to the British Columbia Ferry Corporation	4,821,566	0.4%
14.	Air Transport Assistance	3,598,786	0.3%
15.	Fraser River Crossing & Connectors	3,193,810	0.3%
16.	Trans Canada Highway Lower Mainland Section	695,647	0.1%
17.	Preliminary Planning of Other Projects (Second Narrows Bridge and Approaches)	560,216	0.0%
	Total	**$1,183,176,512**	**100%**

Major Projects — Summary of Expenditures Fiscal Year 1990/91 (Unaudited)

Project Description	Previous Fiscal Years' Expenditures ($)	1990/91 Fiscal Year Expenditures ($)	Total Project Expenditures ($)	
Okanagan Connector	186,463,551	43,856,800	230,320,351	*
Fraser River Crossing & Connectors	347,545,096	3,193,810	350,738,906	
Vancouver Island Highway	14,084,807	50,036,985	64,121,792	
Cassiar Connector	17,256,777	38,171,611	55,428,388	
Sea-to-Sky Highway	7,558,896	6,911,593	14,470,489	
Trans Canada Highway -Lower Mainland Section	495,428	695,647	1,191,075	
Highway 97 – Okanagan	25,939,006	19,682,625	45,621,631	
Barnet/Hastings Corridor	0	7,722,508	7,722,508	
Preliminary Planning of Other Projects: (Second Narrows Bridge & Approaches)	0	560,216	560,216	
Total	**599,343,561**	**170,831,795**	**770,175,356**	

* The authorized budget for this project is $225 Million in 1987 dollars and net of employee benefit chargebacks. However, the above noted expenditure figure includes employee benefit chargebacks and is in nominal dollars.

1990/91 Subsidies to the British Columbia Railway Company (Unaudited)	$
Passenger Service Operating Subsidy	$ 2,750,000
Fort Nelson Extension Operating Subsidy	$ 5,000,000
Royal Hudson Operating Subsidy	$ 288,480
Total	**$8,038,480**

Summary of Revenue by Source, Fiscal Year 1990/91 (Unaudited)*

	Actual $
Taxation Revenue	
Social Service Tax	
Social Service Tax on Cheque Vouchers	1,136,747
Other Revenue	
Fees and Licences:	
Coquihalla Highway Tolls	23,961,671
Miscellaneous:	
Miscellaneous Sales	236,916
Plan Sales and Subdivision Fees	265,039
Rentals All Departments	53,063
Interest From Investments:	
Foreign Exchange	26,675
Miscellaneous:	
Insurance and Claims	629,172
Municipal Share Joint Service Program	3,667,884
Gravel Licence and Royalty	9,981
Other Miscellaneous:	
Miscellaneous Highways	4,840,487
Street Lighting	890,105
Federal Contributions:	
Transportation and Highways	
Federal Ferry Subsidy	17,815,157
Yellowhead Highway	7,809,707
Durrance Lake Rd./Heal's Rifle Range	639,472
Total Revenue:	**$61,982,076**

* Revenues shown reflect Ministry of Transportation and Highways receipts only. Information in the Public Accounts identifying revenue by source will contain revenue from all ministries, particularly in the case of "miscellaneous" receipts.

Summary of Expenditures by Appropriation, Fiscal Year 1990/91 (Unaudited)

Vote	Description	Total Appropriation Estimates ($)	Other Authorization ($)	Total ($)	Actual Expenditures ($)
66	Minister's Office	374,423		374,423	369,750
67	Ministry Operations	639,842,060		639,842,060	636,189,750
68	Transportation Capital	576,661,517		576,661,517	
	Statutory —				
	Transfer to Special Account — Freedom to Move		(576,661,517)	(576,661,517)	
	Special Account — Freedom to Move		576,661,517	576,661,517	547,677,252
Total		**$1,216,878,000**	**0**	**$1,216,878,000**	**$1,183,178,532**

Statement of Expenditure —
Maintenance and Operations of Fresh Water Ferries, Fiscal Year 1990/91 (Unaudited)

Name of Ferry	Expenditures ($)
Albion-Fort Langley Ferry	2,592,876
Arrow Park Ferry	198,218
Barnston Island Ferry Subsidy	463,391
Big Bar Ferry	253,452
François Lake Ferry	1,943,207
Glade Ferry	278,524
Harrop Ferry	278,510
Kootenay Lake Ferry	2,543,406
Little Fort Ferry	199,933
Marguerite Ferry	108,924
McLure Ferry	66,338
Needles – Fauquier Ferry	1,061,038
Shuswap Lake Ferry Subsidy	37,500
Upper Arrow Lakes Ferry	2,176,875
Usk Ferry	232,747
[illegible]	[illegible]
Headquarters Ferry Maintenance and Operations	118,498
[illegible]	[illegible]

Summary of Expenditures by Responsibility Centre, Fiscal Year 1990/91 (Unaudited)

Responsibility Centre	Total Expenditures ($)
SOUTH COAST/REGION 1	90,774,615
Howe Sound District	14,091,041
Sunshine Coast District	2,658,573
Lower Mainland District	23,381,067
Fraser Valley District	14,701,483
Electrical Maintenance District	3,281,854
Subtotal	**$148,888,633**
THOMPSON-OKANAGAN/REGION 2	63,323,799
South Okanagan District	15,728,593
Okanagan-Shuswap District	16,182,933
Nicola District	14,871,672
Thompson District	11,405,187
South Cariboo District	14,755,042
Subtotal	**$136,267,226**
KOOTENAYS/REGION 3	38,790,257
Kootenay Boundary District	11,175,119
Central Kootenay District	21,775,151
East Kootenay District	12,051,739
Selkirk District	15,468,367
Subtotal	**$99,260,633**
CENTRAL/NORTH EAST/REGION 4	71,409,267
Central Cariboo District	13,212,913
North Cariboo District	12,370,833
Fort George District	16,266,282
Robson District	7,287,380
South Peace District	15,150,991
North Peace District	13,072,459
Nechako District	8,815,938
Subtotal	**$157,586,063**

Summary of Expenditures by Responsibility Centre, Fiscal Year 1990/91 (Unaudited) ...Continued

Responsibility Centre	Total Expenditures ($)
NORTH WEST/REGION 5	39,376,408
Lakes District	10,388,394
Bulkley Nass District	12,244,074
Skeena District	8,560,261
North Coast District	2,475,445
Stikine District	9,977,887
Subtotal	**$83,022,469**
VANCOUVER ISLAND/REGION 6	37,848,629
South Island District	13,156,475
Central Island District	10,468,251
North Island District	12,885,819
Subtotal	**$74,359,174**
TOTAL REGIONS	**$699,384,198**
HEADQUARTERS	
MINISTER'S OFFICE	369,750
Subtotal	**$369,750**
EXECUTIVE	
Deputy Minister	380,763
Internal Audit	555,028
Subtotal	**$935,791**
ADMINISTRATIVE SERVICES	
Assistant Deputy Minister, Administrative Services	311,407
Director, Finance and Administration	18,972,550
Director, Information Systems	21,103,188
Director, Personnel Programs	2,423,477
Director, Public Affairs	943,682
Subtotal	**$43,754,304**

Summary of Expenditures by Responsibility Centre, Fiscal Year 1990/91 (Unaudited) ...Continued

Responsibility Centre	Total Expenditures ($)
PLANNING AND MAJOR PROJECTS	
Assistant Deputy Minister, Planning and Major Projects	372,087
Executive Director, Transportation Planning	1,423,735
Contributions to the British Columbia Railway Company	8,038,480
Contributions to the British Columbia Ferry Corporation	4,821,566
Contributions to the British Columbia Transit Authority	216,089,160
Director, Planning Services	2,540,542
Air Transport Assistance	3,598,786
Director, Highway Planning	6,020,917
Manager, Finance and Administration, Planning & Major Projects	389,236
Project Director, Okanagan Connector	43,856,800
Project Director, Highway 97 – Okanagan	19,682,625
Project Director, Cassiar Connector	38,171,611
Project Director, Vancouver Island Highway	50,036,985
Project Director, Fraser River Crossing & Connectors	3,193,810
Project Director, Sea-to-Sky Highway	6,911,593
Project Director, Trans Canada Highway/Lower Mainland Section	695,647
Project Director, Second Narrows Bridge and Approaches	560,216
Subtotal	**$406,403,796**
HIGHWAYS OPERATIONS DEPARTMENT	
Assistant Deputy Minister, Highways Operations	2,235,795
Chief Highway Engineer	425,405
Director, Highway Engineering	10,456,789
Director, Bridge Engineering	3,623,105
Director, Geotechnical and Materials Engineering	6,000,741
Crushed Gravel Recoveries	(1,875,368)
Director, Properties	985,811
Director, Maintenance	9,919,014
Director, Highway Safety	553,315
Women's Programs	6,086
Subtotal	**$32,330,693**
TOTAL HEADQUARTERS	**$483,794,334**
TOTAL MINISTRY EXPENDITURES	**$1,183,178,532**

Highway Maintenance Costs, Fiscal Year 1990/91 (Unaudited)

Contract Area	Payments to Maintenance Contractors	Additional and Emergency Payments to Contractors	District Operations*	Total
South Island	9,500,901	20,533	1,314,734	10,836,168
Central Island	7,419,451	118,198	1,349,972	8,887,621
North Island	9,195,608		1,901,197	11,096,805
Howe Sound	7,273,744	260,666	1,573,548	9,107,958
Sunshine Coast	2,658,523		50	2,658,573
Lower Mainland	13,387,451		4,921,327	18,308,778
Fraser Valley	11,041,722	17,950	1,295,342	12,355,014
South Okanagan	11,883,926	63,414	1,525,381	13,472,721
Kootenay Boundary	8,616,701		1,063,732	9,680,433
Central Kootenay	12,778,804		4,887,655	17,666,459
East Kootenay	8,358,483		1,125,351	9,483,834
Selkirk Revelstoke	8,087,779		4,798,170	12,885,949
Okanagan Shuswap	12,036,881		1,708,030	13,744,911
Nicola	10,966,724	65,705	1,215,646	12,248,075
Thompson	8,808,608	31,136	1,323,694	10,163,438
South Cariboo	10,449,134		1,730,190	12,179,324
Central Cariboo	10,030,443		861,785	10,892,228
North Cariboo	9,582,394		968,426	10,550,820
Fort George	12,535,219		1,241,686	13,776,905
Robson	5,693,327		636,536	6,329,863
South Peace	12,245,880		1,000,633	13,246,513
North Peace	10,229,731		988,493	11,218,224
Nechako	6,420,984		776,073	7,197,057
Lakes	5,463,120		2,806,908	8,270,028
Bulkley Nass	10,073,658		1,233,865	11,307,523
Skeena	4,938,117		1,257,287	6,195,404
North Coast	2,476,284			2,476,284
Stikine	7,968,520	23,245	936,617	8,928,382
Subtotal	$250,122,117	$600,847	$44,442,328	$295,165,292
Headquarters Operations				17,918,860
Headquarters Ferry Maintenance and Operations				118,498
Electrical Maintenance				2,721,854
Regional Maintenance Activities				2,225,653
Total 1990/91 Highway Maintenance Expenditures				$318,150,157

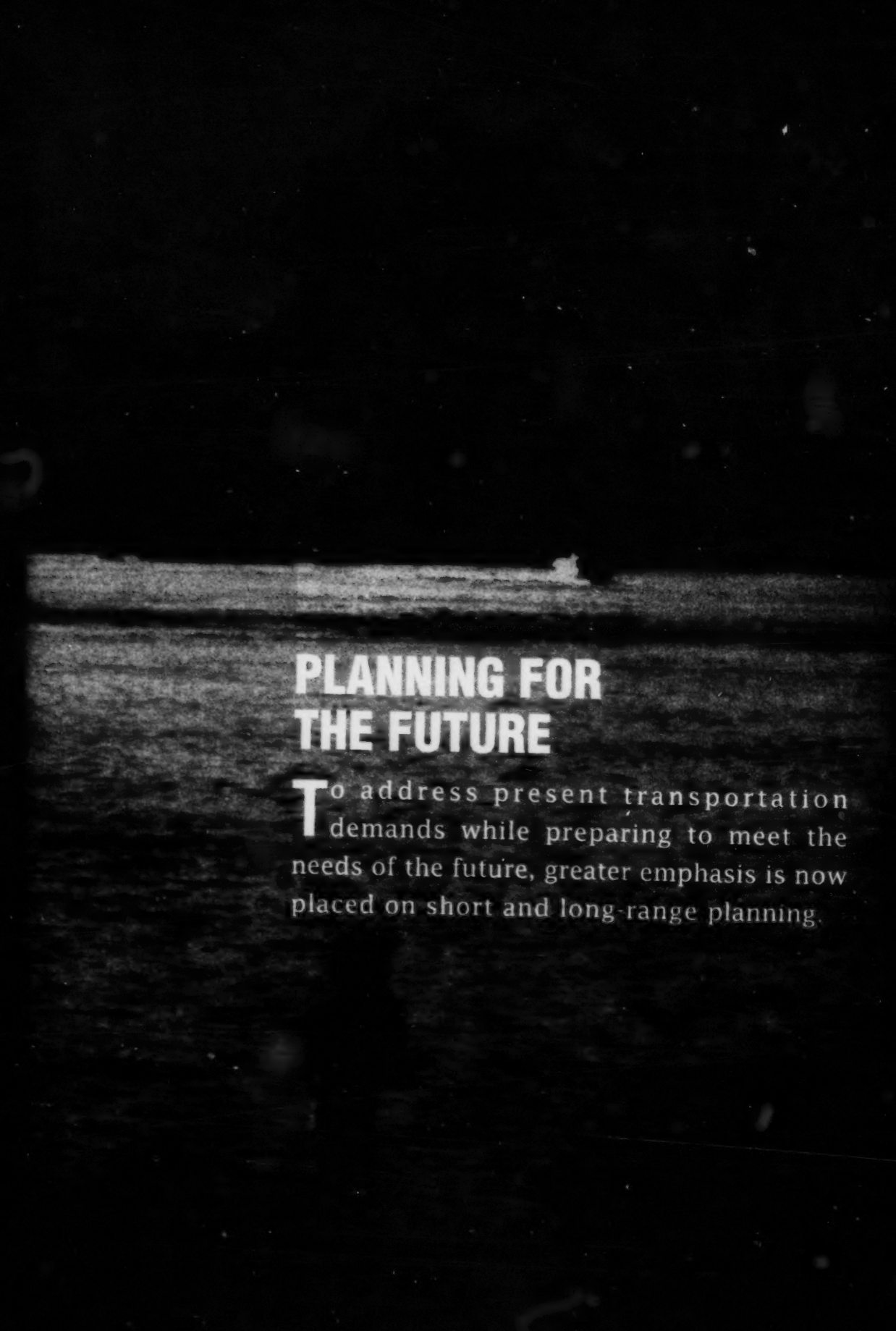
* Comprised of District office costs, Forest Service Roads, Inland Ferries, Grants to Ski Hills and Secondary Highways.

Summary of Expenditures by Electoral District, Fiscal Year 1990/91 (Unaudited)

Electoral District	Highway Rehabilitation	Roads Capital Construction	Fraser River Crossing and Connectors	Okanagan Connector	Vancouver Island Highway	Cassiar Connector	Sea-to-Sky Highway	Trans Canada Highway Lower Mainland Section	Highway 97 Okanagan	Barnet/ Hastings Corridor	Preliminary Planning (Second Narrows Bridge and Approaches)	$ Total
Alberni	5,001,876	2,972,743										7,974,619
Atlin	4,883,144	2,635,454										7,518,598
Boundary-Similkameen	2,831,916	2,044,001							71,214			4,947,131
Burnaby-Edmonds	1,561,336	4,018,619										5,579,955
Burnaby-North	35,999	177,422								3,017,058		3,230,479
Burnaby-Willingdon	44,953	22,500										67,453
Cariboo	17,075,635	4,734,624										21,810,259
Central Fraser Valley	2,349,391	839,284										3,188,675
Chilliwack	1,079,629	6,773,130										7,852,759
Columbia River	2,894,511	1,218,012										4,112,523
Comox	2,268,554	1,841,257			5,646,246							9,756,057
Coquitlam-Moody	353,665	368,233								4,705,450		5,427,348
Cowichan-Malahat	1,145,827	595,476			15,867,236							17,608,539
Delta	3,006,204	3,391,197	111,447									6,508,848
Dewdney	141,217	10,383,685										10,524,902
Esquimalt - Port Renfrew	1,716,498	10,045,986			400,087							12,162,571
Kamloops	5,049,059	21,189,141							64,121			26,302,321
Kootenay	3,295,635	796,487										4,092,122
Langley	767,484	2,179,641										2,947,125
Mackenzie	2,104,065	3,799,300										5,903,365
Maillardville-Coquitlam	104,657											104,657
Nanaimo	1,771,733	1,347,186			9,947,335							13,066,254
Nelson-Creston	6,057,425	7,649,211										13,706,636
New Westminster	1,367,337	620,410	575,610									2,563,357
North Island	7,299,922	3,964,871			3,681							11,268,474
North Peace River	4,234,454	10,107,545										14,341,999
North Vancouver-Capilano	1,106,661	8,201,763										9,308,424
North Vancouver-Seymour	125,910	9,361,451						695,647			560,216	10,743,224

Summary of Expenditures by Electoral District, Fiscal Year 1990/91 (Unaudited) ...Continued from previous page

Electoral District	Highway Rehabilitation	Roads Capital Construction	Fraser River Crossing and Connectors	Okanagan Connector	Vancouver Island Highway	Cassiar Connector	Sea-to-Sky Highway	Trans Canada Highway Lower Mainland Section	Highway 97 Okanagan	Barnet/ Hastings Corridor	Preliminary Planning (Second Narrows Bridge and Approaches)	$ Total
Oak Bay-Gordon Head		11,475										11,475
Okanagan North	2,314,458	6,321,563							18,902,240			27,538,261
Okanagan South	4,846,280	3,484,980		12,276,656					97,695			20,705,611
Omineca	10,075,708	6,506,223										16,581,931
Prince George North	3,724,582	11,838,218										15,562,800
Prince George South	11,236,827	2,719,895										13,956,722
Prince Rupert	427,161	191,999										619,160
Richmond	593,154	552,387	2,506,753									3,652,294
Rossland-Trail	3,820,408	4,712,709										8,533,117
Saanich & The Islands	351,763	485,373			13,077,496							13,914,632
Shuswap-Revelstoke	11,135,476	11,578,130							547,355			23,260,961
Skeena	6,627,272	19,235,280										25,862,552
South Peace River	2,861,056	10,269,031										13,130,087
Surrey-Guildford-Whalley	160,649	13,105,429										13,266,078
Surrey-Newton	284,207	15,000										299,207
Surrey-White Rock-Cloverdale	1,037,492	1,232,553										2,270,045
Vancouver Centre	19,182					17,261						36,443
Vancouver East						38,154,350						38,154,350
Vancouver-Little Mountain												0
Vancouver-Point Grey												0
Vancouver South	10,464											10,464
Victoria	12,454	17,608			171,776							201,838
West Vancouver-Howe Sound	3,307,674	5,597,687					6,911,593					15,816,954
Yale-Lillooet	8,021,771	6,046,363		31,580,144								45,648,278
Headquarters	4,389,861	26,286,139			4,923,128							35,599,128
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]



PLANNING FOR THE FUTURE

To address present transportation demands while preparing to meet the needs of the future, greater emphasis is now placed on short and long-range planning.

PROVINCIAL TRANSPORTATION PLAN

May 3, 1990, the first ever Provincial Transportation Plan was announced. The plan represents the collective input of many British Columbians.

The plan is in two volumes. The first describes government's approach to transportation assuming the demand for certain elements will continue. The second lists 200 planned projects to be undertaken over five years including transit improvements, new and upgraded highways, community airport expansion and ferry construction.

Priority is placed on roads in areas where transit is not an option. In urban areas, especially the Lower Mainland, the priority is for moving goods and people, not cars. For example the announced SkyTrain extensions to Coquitlam and Whalley, and the Barnet-Hastings People Moving Project.

The plan recognizes there's a need to change the public's attitude toward transit and acknowledges that transportation planning must minimize environmental impact while stimulating economic development.

Freedom to Move Account The Freedom to Move Account was set up to provide a five-year commitment of $3.5 billion for capital projects outlined in the Transportation Plan. It allows the ministry to plan transportation projects over the long term.

Also, financial and human resources will be more evenly distributed and construction scheduling more flexible so project managers may take advantage of changes in project design, supply costs and weather conditions to save money.

Transportation Council The Transportation Council (Minister of Transportation and Highways; Chair and CEOs of B.C. Transit, BC Rail Ltd., and British Columbia Ferry Corporation; the Assistant Deputy Minister of the Motor Vehicle Branch of the Ministry of Solicitor General; and the Deputy Minister and key planning staff of the Ministry of Transportation and Highways) met six times to discuss and make recommendations on subjects such as:

- Transit priority measures,
- Transportation planning for the Lower Mainland including car pooling and van pooling,
- Fast ferries,

- Capital programs and projects of each agency,
- The Royal Commission on National Passenger Transportation,
- Rail abandonments,
- Resource roads, and
- The impact of native land claims on transportation.

Support Programs to Aid in Planning A comprehensive functional classification system for provincial highways and a technical support process to assist the ministry in developing annual and multi-year programs were developed.

RAIL INITIATIVES

CN Rail Right-of-Way Purchase The ministry worked with the Ministry of Lands and Parks to acquire the abandoned CN Rail right-of-way in Victoria. This will be held for future transportation use.

On the Yellowhead Trans Canada Highway an overhead crossing of the Canadian National Railway tracks to accommodate future twinning of CN Tracks, cost shared with the federal government, was completed October 1990.

E&N Passenger Service Operated by VIA Rail Canada Inc The ministry worked with the Ministry of Attorney General in preparing for the federal government's appeal of the BC Supreme Court 1989 decision that provision of the service is a constitutional obligation. The ministry has continued to monitor the operation of the E&N passenger service pending the outcome of the appeal.

Royal Commission on National Passenger Transportation The ministry provided the Royal Commission with a descriptive and statistical paper entitled *"Overview of Passenger Transportation in British Columbia."*

Royal Hudson Steam Train Effective April 1990, responsibility for operating the Royal Hudson steam train was transferred from the Royal Hudson Society to BC Rail. The responsibility for providing financial assistance to BC Rail for operating the Royal Hudson was assumed by the Ministry of Transportation and Highways.

Ports Policy May 1990 Cabinet approved the British Columbia Ports Policy.

For six major ports managed under the administrative mandates of the Canada Ports Corporation Act and Harbour Commissions Act, recommendations include:

- Improving the effectiveness of the Western Regional Advisory Council (W.R.A.C.) established under the Canada Ports Corporation Act to advise the federal Minister of Transport on the management, planning and development of west coast ports;
- Enhancing provincial input into management of the Local Port Corporations (Vancouver and Prince Rupert) and the Harbour Commissions (Port Alberni, Nanaimo, Fraser River and North Fraser) through the appointment of provincial nominees to Boards of Directors and Commissions;
- Improving communications between communities and Port Corporations/Harbour Commissions through formal port/municipal liaison committees; and
- Establishing formal port/provincial liaison committees for each Local Port Corporation and Harbour Commission.

The ports policy also established a need for properly constituted local authorities to manage and develop local and regional harbours. At present, jurisdiction falls under a number of agencies from all levels of government. The Ports Policy program for minor ports consists of:

- Development of provincial legislation to establish Community Port Authorities (CPAs) responsible;
- Devolution of Provincial Crown Lands within the harbour to CPAs through head leases or other tenures;
- Negotiations with the federal government regarding the transfer of federal port facilities to CPAs and associated funding formula;
- Development of a provincial capital grant program (the Marine Transport Assistance Program(MTAP) — similar to the existing Air Transport Assistance Program (ATAP); and

- Creation of a framework of support and guidance for CPAs in the management and development of their harbours and port facilities.

Drafting has begun on the Community Port Authorities Act and its associated regulations that will provide the basis for achieving port policy objectives.

ROAD INITIATIVES

Road initiatives concentrated on making better use of existing roads and encouraging fuel and transit alternatives.

Environment-friendly Alternatives

- Research was carried out on strategies for reducing traffic congestion, for example, vanpooling and transit tax incentive programs as well as alternate fuels, energy conservation measures, reductions in single occupancy vehicles;
- A survey of North American government regulations was carried out on the transportation of dangerous goods on highway structures such as tunnels and bridges and a procedure was established for municipalities and the Province to provide for coordinated access of dangerous goods into municipalities; and
- In cooperation with other agencies, an inventory of and a coordinated strategy for reduction of greenhouse gases is being prepared for government review in the next fiscal year.

Resource Roads Resource roads access natural resources but are also used by the public for recreational purposes or to access communities or provincial parks.

In response to public and resource industry concerns, a Resource Roads Task Force made up of representatives from 11 ministries was set up in early 1990. The Task Force recommended a three-pronged approach to simplify resource road provision and management:

- New legislation to standardize guidelines for resource roads, from initial development to final disposition;
- Establishment of Regional Resource Roads Committees to ensure issues can be dealt with cooperatively and there is a centre of responsibility in each region, particularly for multiple-use roads; and

- Inter-ministry agreements for uniform access management guidelines, funding, planning and maintenance to provide a consistent base to suit both public interest and private industry.

New legislation and policy will be drafted next fiscal year after identified groups have an opportunity to review and comment on the Task Force's recommendations.

Carpool and Park and Ride Together with B.C. Transit a project to reduce the number of vehicles commuting to work in the Lower Mainland was undertaken:

- A 250-stall park-and-ride lot was built with direct bus access to Highway 99 in South Surrey.
- A second 70 stall park and ride to service an existing bus route was built on Highway 1 near 104th Avenue in North Surrey.
- Four 125-vehicle park and pool lots were planned for South Surrey.
- The Pattullo-Scott Road Interchange project, located within the District of Surrey provides access to the SkyTrain station and increases the capacity of the King George Highway/Scott Road interconnection.
- A 1200-car Park-and-Ride was installed by Scott Road SkyTrain station,
- Clarke Street (Port Moody) was designated a bus queue jumper lane resulting in a seven-minute saving in commute time to downtown Vancouver and a 19 per cent increase in transit ridership.
- All highway planning in the South Coast Region now includes an assessment of the viability and where feasible, the inclusion, of HOV (high occupancy vehicle) lanes on all highway upgrading projects.

Overweight and Overlength Vehicles To make sure present policies effectively protect our roads from damage, a research project on overweight and overlength vehicle regulations in North America was completed in conjunction with the testing of overweight and overlength vehicles on British Columbia highways.

ROADBUILDING

BUILDING NEW ROADS

The development of our highway system continues with the building of new roads as part of the ministry's Capital Construction Program (See Appendix A for Capital Construction Program Elements) to:

- Address safety concerns;
- Open up new areas to stimulate regional economic development or to access already located resources;
- Provide a more efficient transportation system to encourage further trade and tourist travel in those regions with the potential for growth; as well as to
- Alleviate traffic congestion or traffic flow problems in populated areas.

New roadbuilding projects are identified according to regional need. The decision to go ahead is based on:

- Economic development needs in the region and the province;
- Transportation need in the region and province;
- Public input; and
- Previous work done in the area.

This fiscal year, 345.08 km of road was added to the system along with 11 bridges (For a list of the bridges added to the system, refer to Appendix B).

Major new roadbuilding projects appear in the Major Projects section.

Property Negotiation The ministry acquires and manages property needed for highway rights-of-way and other purposes such as gravel pits. This includes negotiations with property owners, appraisals of land and buildings, arrangement of leases and reservations of Crown lands, disposal of surplus properties and management of properties held by the ministry.

During the year, 907 agreements were negotiated at a total cost of $52,728,120.00. Of this, $21,680,248.03 was expended on the Vancouver Island Highway Project and $4,327,098.00 on the Okanagan Highway.

Expropriation Act This Act protects the interest of property owners by guiding how the ministry acquires properties for highway purposes. It provides property owners:

- Longer lead time to deal with the ministry and to make decisions for their benefit;
- Legal and appraisal services to ensure owners receive fair compensation; and
- A forum — Expropriation Compensation Board — through which compensation disagreements may be arbitrated.

This year eight arbitrations involving the Ministry of Transportation and Highways were heard. Five were in the Lower Mainland and three in the Thompson-Okanagan. Examples are:

- Hearing before ECB over compensation for lands expropriated for widening of Scott Road in Surrey. Value of land and improvements were dealt with; business loss will be dealt with later.
- The Provincial Crown's right to resume up to 1/20 of Crown-granted land for highway purposes without compensation (unless certain improvements have been made) was challenged. The Crown's right was upheld though compensation was awarded for damages and trespass.
- A claim of business loss for a restaurant due to ministry activities in the area was settled by negotiation on the last day of the hearing.

UPGRADING FOR GROWING TRAFFIC VOLUMES

The program to upgrade our highway system for growing traffic numbers continues as part of the ministry's Capital Construction Program (See Appendix A for Capital Construction Program Elements) to:

- Enhance the safe and efficient movement of goods and people;
- Increase carrying capacity and alleviate traffic congestion;
- Support regional development as well as encourage tourist travel; and
- Protect the public investment in the provincial highway system.

Identifying projects for upgrading is the same as for building new roads with the addition of in-depth corridor studies taken at intervals along all the major routes to identify traffic volume demands and safety hazards.

Upgrading projects include widening major roads and straightening curves, eliminating at-grade intersections and widening and replacing bridges. Highlights of the ministry's road upgrading program follow.

Rest Area Upgrading To enhance roadside services, a program of rest area upgrading began. Rest areas that are redundant or see limited use will be phased out while those that are well used will be upgraded. As well, new rest areas will be built in strategic and scenic locations. For example:

- South Cariboo District — with the Heritage Conservation Branch of the Ministry of Municipal Affairs, Recreation and Culture — constructed a rest area on Highway 24 at Lac Des Roche overlooking the R.A. McDonald homestead. R.A. McDonald played a role in opening the area and building the original roads that are now part of Highway 24.
- The Central/North East Region initiated a project to enhance the Wire Cache Rest area, approximately 11 kilometres south of Avola on Yellowhead Highway 5. A new, full-service building was built and opened the beginning of the summer tourist season. Further upgrading will be undertaken in 1991 including paving of the rest area. In 1992 the rest area will be open to the public year round.

Trans Canada Highway 1

- In the Lower Mainland area, (see Major Projects, Cassiar Connector also) in North Vancouver, an interchange is planned at Westview to eliminate a major traffic bottleneck on the Upper Levels Highway, improve safety and address North Vancouver City Council concerns. It is the result of a comprehensive public consultation process and compliments plans to make Highway 1 a freeway to Horseshoe Bay.
- In the Kamloops area, to enhance safety and traffic flow from Barnhartvale to Campbell Creek, the highway is being widened to four lanes complete with collector roads, pedestrian overpasses and a vehicular overpass. Work continues with completion set for 1992.
- East of Kamloops from Campbell Creek to Monte Creek, design and property acquisition for 13 kilometres of four-laning commenced. The project includes a major interchange at Highway 97, a secondary interchange west of Monte Creek and upgrading of the Tumbleweed interchange/CN spur line, all to enhance traffic flow and safety.

- In Salmon Arm, Hospital Road to Highway 97B, design and property acquisition commenced on 4.9 kilometres of four-laning and an interchange at Highway 97B.
- East of Salmon Arm, Canoe to Annis Bay, design and property acquisition are almost complete for four-laning 8.4 kilometres.
- To address safety and capacity concerns, the ministry commissioned a study to examine alternate corridors and between Donald and Yoho. The study included an extensive public consultation and evaluated corridors on both sides of the Columbia and Kicking Horse Rivers. A preferred route for a future expressway will be recommended early in 1992. Engineering and environmental studies continue.

Yellowhead Trans Canada Highway November 1990 the ministry announced the renaming of Yellowhead Highway 16 to Yellowhead Trans Canada Highway. The Yellowhead Highway Association (representatives from communities and businesses along the highway from Winnipeg to Prince Rupert) requested the change.

The southern leg (Highway 5) was not renamed to avoid confusion at the junction of Trans Canada Highway 1.

Completed projects along Highway 16 addressed both safety and traffic flow concerns:

- Construction of Esker Rail Crossing Overhead 30 kilometres west of Terrace eliminating an accident-prone level crossing.
- Hazelton Arterial four-laning to allow the route to handle resident and drive-through traffic safely and efficiently.
- Carnaby Crossing to Kitseguekla River consisting of construction of 9 kilometres of two-lane highway.
- A realignment project from Anderson Road to Barrett Station Road (Stock Creek), eight kilometres west of Houston, eliminated a dangerous curve.
- Deceleration lanes were constructed at the intersections of Raceway and Alder Roads with Highway 16 so vehicles are not entering side roads at high speeds.
- In preparation for the 1991/92 fiscal year, design work was also completed for a number of projects including 18 Mile Hill Realignment and paving from Terrace to Exstew Crossing.
- Corridor studies are under way to find out if there are traffic and safety concerns in the Houston/Burns Lake, Smithers, Prince Rupert and Terrace areas.

Yellowhead Highway 5 The upgrading program within the north end of the City of Kamloops is under way with the construction of 11 kilometres of four-lane highway and collector roads from Raleigh to Heffley Creek. Completion is scheduled for summer 1991.

Highway 7 The program to increase traffic capacity and safety along Lougheed Highway in the Lower Mainland continues. November 1991 a project between Highway 11 and the Mission Couplet was completed that included widening the road from two to four lanes; installing sidewalks, curbs and highway drainage; redecking Pallot Creek Bridge; and installing median barriers from Pitt River Bridge to Harris Road in Pitt Meadows to lessen the possibility of head-on collisions.

Highway 97 This fiscal year, $2.5 million worth of improvements were made to the highway and Prince George road network to enhance traffic safety and efficiency:

- Continental Way Overpass, completed spring 1991, eliminated a potentially dangerous at-grade crossing.
- Continental Way to Simon Fraser Bridge minor upgrading roadworks.
- Highway 97 south scale relocation.
- Sintich Road to Continental Way, widening from two to four lanes continues.

Highway 99 – Duffey Lake Road To provide a safe alternate route to and from Whistler, the existing 84.4 kilometres of gravel road was upgraded to a two-lane, hard-surface highway from Mount Currie to Lillooet. Originally scheduled for completion in late 1990, the final paving phase was postponed as a result of native blockades.

Highway 101

- Construction continues on the Gibsons Bypass on the Sunshine Coast — a three-phase project that will result in safer, more efficient four-lane, controlled-access rural expressway bypassing Gibsons. Traffic congestion in Gibsons will be reduced and an alternate route for the transport of dangerous goods away from the urban population will be achieved.
- To enhance traffic flow and safety, a further 2.2 kilometres of the Sunshine Coast Highway 101 (from the north junction of Mercer Road at Wood Bay to Donley Drive) was realigned and reconstructed to a better standard with right-of-way extensions, new residential accesses, paved shoulders and roadside barriers.

Nisga'a Highway Design plans and preliminary engineering have been completed in preparation for reconstruction and paving of 13 km from Cedar River to Sand-Gainor Bridge. Two bridges will also be replaced at Maroon and Wesach Creeks.

Nicol Street in Nanaimo To lessen accidents on Nicol Street, the ministry removed most overhead wires, added an extra traffic lane and left-turn lanes on Nicol at Needham and Milton Streets, and sequenced traffic signals to end "stops-and-gos". Extensive landscaping and renewal of sidewalks and retaining walls were also done.

Durrance Lake Road in Greater Victoria In conjunction with the federal government, approximately five kilometres of new two-lane road was constructed between Durrance Lake and the Department of National Defence rifle range. Vehicles can now access the Durrance Lake area without worrying about closures due to rifle range activity.

Nordel Way This project, completed July 1990, extended Nordel Way from 112th Street to 116th Street to improve South Surrey and Delta commuters' access to the Alex Fraser Bridge. The needs of local residents were considered with the construction of sound barriers.

Delta cost-shared this project and upon completion the road was declassified and became the responsibility of the municipality.

Planning for the extension to 120th Street (Scott Road) and east into Surrey will begin early in 1992.

REHABILITATION – PROTECTING THE PUBLIC'S INVESTMENT

Recognizing the high-return investment of a timely program of rehabilitation, a budget of $155,618,677 million was approved this fiscal year. (For more information on rehabilitation procedures see Appendix D.)

Throughout the year:

- 2090.7 km of road was repaved;
- 1277.07 km of gravel/dirt road was sealcoated;
- 48 bridges were replaced; and
- The bridge resurfacing crew replaced deteriorated concrete wearing surfaces on 20 bridges to extend the useful lifespan of the existing bridge structures.

Hot-in-Place Recycling A total of 588.07 kilometres of two-lane equivalent were upgraded by hot-in-place recycling. This cost-effective method to extend the life of the asphalt road surface can be done on-site with minimum inconvenience to the traveller and maximum efficiency.

Examples of Rehabilitation projects

- Replacement of the single lane, wooden Nechako Bridge with a two-lane concrete structure to improve the traffic flow between north and south Vanderhoof. Scheduled for completion June 1991.
- In the Nicola district, 20 kilometres of road was sealcoated and six kilometres repaved. A new bridge was constructed at Brookmere and the Lytton Bridge was rehabilitated to maintain its economic value to the community.
- The 18 km Mt. Washington Road leading to a ski resort on Vancouver Island became ministry responsibility May 1990. The first year of a five-year program to improve the route, $250,000 was spent on upgrading and signing. Consultation with the ski resort, ICBC and RCMP targeted areas to be included in road designs.

MAJOR PROJECTS

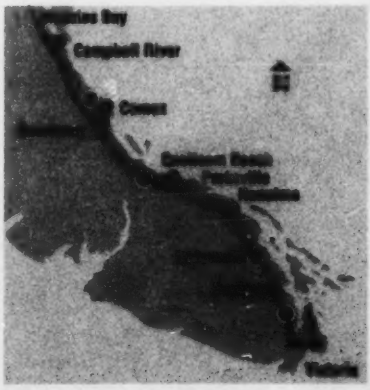
A major project is a highway project with an estimated cost of more than $50 million. This may include reconstruction of an existing highway as well as new highway construction.

Major projects are usually carried out over several years with at least half the time allotted for planning (see Appendix E for detailed information on the planning process) to allow for public consultation and environmental studies.

At this time, the ministry has eight major projects under way.

Vancouver Island Highway Announced in November 1988, this is the largest highway project ever undertaken by the ministry. Its purpose is to address public concerns over user safety and traffic congestion along the route from Swartz Bay south to Victoria, then north to Menzies Bay (north of Campbell River).

March 1990 plans to upgrade the Pat Bay Highway to freeway status were modified to expressway standard in response to public concerns.



In the 1990/91 year, project planning and alignment selection proceeded, and many sections of the highway entered preliminary and detailed design including the Trans Canada Highway and Patricia Bay Highway approaches to Victoria.

Public consultation accelerated this year, focusing on the Greater Victoria area where liaison committees and information drop-ins were organized. Community involvement programs were also conducted at other points along the route. Public input is reviewed and used in developing highway design.

Project construction has started on the Trans Canada Highway in Mill Bay to upgrade from two to four lanes and develop frontage roads that will reduce the number of direct highway accesses. Completion is slated for fall 1991.

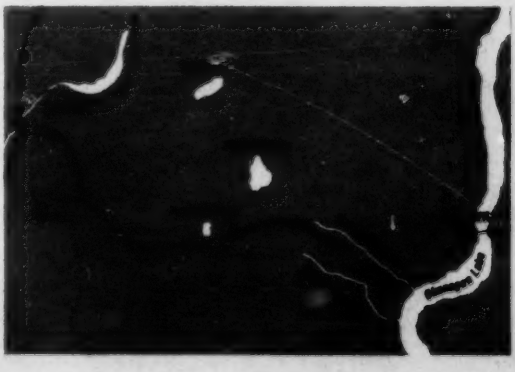
Project milestones this year included:

- Selection of final alignment for the Inland Island Highway route (Parksville to Menzies Bay);
- Tenders called for clearing and grubbing on the Church Road to Whisky Creek section of the Inland Island Highway;
- Selection of the Nanaimo Inner Route alignment; and
- Selection of the alignment between Tunnel Hill and Shawnigan Lake Road (between Victoria and Duncan).

At year end the project schedule was being updated in light of restricted financing. This is expected to be finalized next fiscal year.

Okanagan Connector The Okanagan Connector opened on October 1, 1990, one year ahead of schedule and within the budgeted cost of $225 million (1987 dollars). This project is the third component of a system of highways linking the Lower Mainland to the southern interior designed to:

- Stimulate economic development by providing access to new areas of the Interior and providing further tourist routes; and
- Provide a safe, efficient high-quality alternate route.



Phase I involved new construction of 115 km of four-lane highway from Hope to Merritt that was opened May 16, 1986.

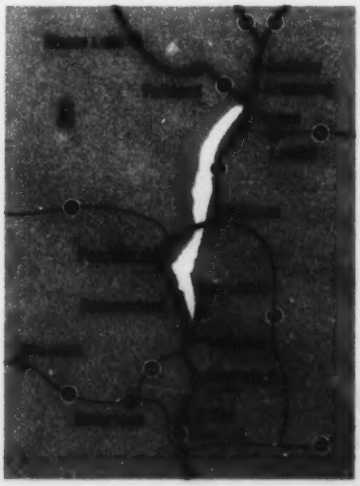
In Phase II, 75 km of new highway was built from Merritt to Kamloops and opened September 4, 1987.

Completion of Phase III, the Okanagan Connector provides an additional high-quality route that reduces travel time between the Okanagan and Lower Mainland by approximately ninety minutes and creates a number of circle routes to encourage tourism in the Southern Interior.

The project scope included:

- A total of 108 km connecting Highway 5 at Merritt to Highway 97, between Peachland and Westbank including:
  - 8 km of new four-lane highway from Merritt to Garcia Lake to replace Hamilton Hill
  - 16 km of existing two-lane highway from Garcia Lake to Aspen Grove;
  - 84 km of four-lane highway from Aspen Grove to Highway 97, 60.9 km of which is new construction
- Four precast concrete girder construction bridges; and
- A comprehensive wildlife protection program (see Environment section).

Okanagan Highway 97 An ongoing reconstruction project of Highway 97 from the U.S. border to the Trans Canada Highway including Highways 97A and 97B announced in 1988 to:



- Relieve growing traffic congestion through populated areas; and
- Alleviate user safety concerns.

Construction projects this fiscal year included:

- Trout Creek to Bentley Road—9.3 km of four-lane highway reconstruction through Summerland to provide additional traffic capacity in this congested area,

- Beaver Lake Road to Woods Lake — 5.0 km of four-lane reconstruction through Winfield to relieve traffic congestion.
- Vernon 32nd Street Extension — 5.7 km of new four-lane highway relocation through Vernon to relieve traffic congestion through the City and provide a more direct north/south route for Highway 97.

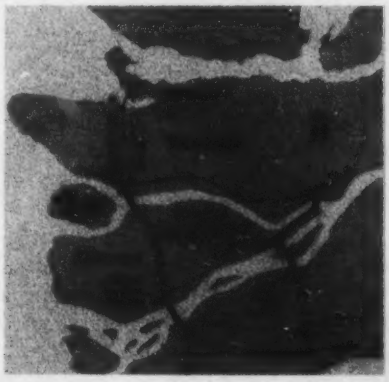
An Okanagan Highway 97 Stage 1 project scope, schedule and budget was defined this fiscal year including essential highway improvements from Osoyoos to Vernon, as identified in the Transportation Plan.

Public input was sought through information drop-ins held in Peachland, Summerland, Oyama and Westbank. Discussions with the Ministry of Environment and concerned citizens continue to ensure environmental issues are addressed.

For the remainder of the Okanagan Highway 97 improvements, the project scope, schedule and budget require considerable additional planning and engineering before they can be adequately defined for funding approval.

Fraser River Crossing and Connections The Highway 91/91A system (Fraser River Crossing and Connections) interconnects the Delta and Surrey areas south of the Fraser River with Richmond and the New Westminster area via the Queensborough Bridge and includes:

- The world-class Alex Fraser Bridge;
- The first freeway-to-freeway interchange (Highway 99 and the Richmond Freeway) in British Columbia;
- Over 30 km of new multi-lane highway;
- 37 bridges and overpasses;



- 16 km of connecting roads;and
- Relocation of 11 km of rail lines.

The Richmond Freeway (Highway 91A), providing an alternate route for traffic into Richmond and to Vancouver via Knight Street, was mostly completed in 1989 at the cost of $100 million. The final phase of the project will be to replace the three signalized intersections on Highway 91A with interchanges, bringing Highway 91A to full freeway standard.

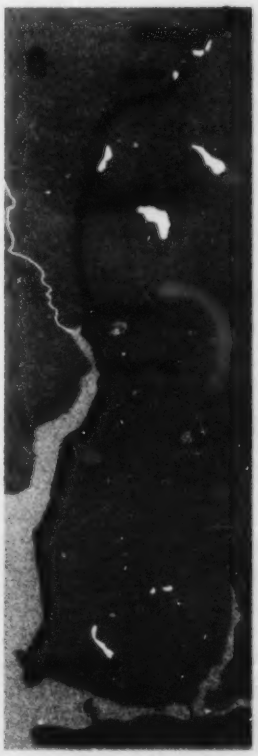
The design of the Hamilton and Westminster interchanges is now under way and should be completed by spring 1992.

The ministry is also preparing contracts for four bridge consultants to design river spans and approaches to the Annacis Channel West Bridge. Construction is due to start summer 1992 with bridge completion slated for 1993 and roadworks early summer 1994.

Queensborough and Queensborough North interchanges will not get under way until the ministry undertakes the Fraser River North Arm crossing study. This is expected to start in January 1992 and take approximately six months.

Sea-to-Sky Project The Sea-to-Sky project is an ongoing reconstruction project of Highway 99 from Horseshoe Bay to Whistler. The project was initiated in 1989 to:

- Address slide and flooding concerns along the route;
- Make the route more efficient as well as safer;
- Enhance the route to serve rapidly growing tourist travel;
- Encourage further development of the communities along the corridor; and
- Determine the long term requirements this route must fulfill.



This project is in the early planning phase. While selective construction activities are under way, full project scope and budget development will require much work before full project approval is sought.

Danger points are being attended to first and will continue to have priority.

In 1990/91 work was almost completed on the Brohm Lake to Cul:iton Creek portion — reconstruction of more than seven kilometres and a concrete bridge.

No estimate of construction cost or completion dates is available until more work has been completed on the overall scope of this project.

Cassiar Connector The Cassiar Connector Project involves upgrading 2.3 km of the Trans Canada Highway east of the Second Narrows Bridge in Vancouver to freeway standard to eliminate at-grade intersections with the city's street system. It includes:

- A 30 m long, 30 m wide, cut and cover reinforced concrete, twin tube tunnel with state-of-the-art ventilation and lighting systems and two lanes in each direction with paved shoulders wide enough to enable conversion to a six-lane expressway in the future.
- A second tunnel, west of the main tunnel, for buses to cross under Hastings Street and access a transit exchange to be built here.
- A three-level interchange with directional ramp connections will be constructed at the north end of the project.
- Removal of the Rupert Street diversion to allow Rupert Park to be amalgamated into one site.

The estimated project cost in 1989 dollars is $110,700,000 including right-of-way acquisition by the Province. The City of Vancouver provided right-of-way through city-owned land along the east side of the PNE grounds.

Design commenced in 1989 and construction started in 1990. The tunnel will be open to traffic January 1992 with landscaping to be completed fall 1992.

Trans Canada Highway – Vancouver to Langley The ministry is studying ways to improve traffic flow on Highway 1 from the Cassiar Connector to 200th Street in Langley.

The first phase, identifying problems associated with peak period congestion, has been completed and will contribute to the Greater Vancouver Regional District's two-year Transportation Study and ministry improvement plans for the route. Transit solutions are a priority to find out if this will moderate the need for highway upgrading.

Recommendations for corridor improvements will define the full project scope and require approval before implementation.

Barnet/Hastings Project This project is the ministry's first "Go Green" road project in the Lower Mainland designed to promote the use of new articulated buses and high occupancy vehicle (HOV) lanes. The objective is to move more people, not just more cars, along a major commuter route.

The project includes:

- Four-laning Barnet Highway from St. Johns in Port Moody to Hastings Street at the Burnaby/Vancouver border to accommodate dedicated lanes for buses and carpools;
- Six-laning some portions of Hastings Street;
- A transit exchange in Port Moody for the new articulated buses;
- Counterflow lanes on Hastings Street; and
- A bypass route on Highway 7A in Port Moody.

This year, a comprehensive program of public consultation was put into place (see Working With the Public section) to hear and, where possible, address community and affected individuals' concerns before finalizing project design.

Construction is expected to be completed early 1993 on the Hastings/Barnet section with the Port Moody bypass slated to open in 1994.

ROAD AND BRIDGE MAINTENANCE

In 1987, private-sector contractors in 28 areas around the province assumed responsibility for maintenance services over a three-year period, with the first contract commencing September 1, 1988.

Contracted Road and Bridge Maintenance continued through the second year, as did the ministry's Quality Assurance Program, to ensure public safety and ministry-standard service province-wide.

One contractor, Northland Road Services (Quesnel) Ltd., was assessed to be performing inadequately in the North Cariboo service area and, through the default process, was replaced with another contractor on January 18, 1991.

Maintenance Services include pavement patching, snow removal, roadside mowing and brushing, litter collection, bridge cleaning and highway accident response. (For a complete list of Maintenance Services, see Appendix F.)

Quality Assurance Program This set of detailed, written maintenance standards along with a work-reporting system was developed in 1988 to measure the quality of work performed. More than 140 ministry Area Managers manage the Quality Assurance Program and oversee maintenance performance.

Next Round of Negotiations In 1990 a review, based on experience gained since 1988, identified changes required to improve benefits from Road and Bridge Maintenance contracts.

Included in the review was the ministry Quality Assurance Program, Standards for Maintenance Activities, and general policy on issues such as incentives for excellent service.

Changes intended for implementation in the next round of contracts are:

- Development of a Management Assurance Program, which along with the Quality Assurance Program would help ensure contractors fully plan, schedule, and manage operations to deliver consistently dependable maintenance service;
- Clarification of maintenance standards and clearer definitions of the responsibility of contractors for maintenance activities;
- Provisions to permit payment holdbacks if performance is assessed inadequate for any activities, which, along with the default provision, will be an additional incentive to perform well; and
- Provision for a possible two-year extension to contracts, which will not take place if a contractor fails to perform fully.

A broadly advertised information session was held in Vancouver in February to inform interested parties of the upcoming renewal process and services required. The session was attended by representatives of 84 private companies.

Single Lane Closure Windows — Lower Mainland Lane closures for project work and maintenance in the Greater Vancouver Regional District can cause major traffic jams if not carefully orchestrated. The ministry developed a strategy workbook complete with maps showing recommended times for lane closures on some 200 road segments in the Lower Mainland. This will be updated regularly taking into account the latest traffic volumes as well as increased scope and details.

SAFETY INITIATIVES

Providing safe highways is a commitment the ministry strives to improve each year.

Earthquake Preparedness Plan In 1990/91, the ministry:

- Prepared a first-pass evaluation of bridges and other structures in the high risk zones with more comprehensive reports for several of the major bridges in the Lower Mainland to identify what needs to be done to make them safer during an earthquake;
- Identified key escape routes, particularly in the Lower Mainland area; and
- Upgraded communications centres to ensure back-up facilities are available in the event of a key centre being "knocked out."

Work continues to complete this plan next fiscal year.

Avalanche Management Program The Snow Avalanche Program ensures safe passage of vehicles through identified avalanche areas.

In 1990/1991 snowpack depths, frequency of avalanches and road closure times (particularly in the south of the province) were well above average by the end of December. Avalanches recorded from avalanche paths which have the potential to affect B.C. Highways was 3,186, up from 1,642 the previous winter.

To enhance the provincial Snow Avalanche Program this fiscal year:

- Modifications were made to the communication system of 37 automated-electronic weather stations throughout the province to improve the quality and consistency of weather data results and more accurately forecast avalanche hazards.
- Defense structures were constructed to deflect and retard the flow of avalanche debris above Duffey Lake Road to ensure safer passage and reduce closure times.
- Discussions are under way with local and provincial weather service offices to provide up-to-date weather information which results in more accurate weather forecasts.
- Avalanche training programs under went a comprehensive review with emphasis placed on search and rescue to maintain the highest level of safety for the travelling public and maintenance crews.

At the local level:

- Public information days with displays, a slide show and videos, were held in Stewart, Kamloops, Revelstoke and

Nelson to inform residents of the ministry's program and provide tips to follow if ever caught in a sudden avalanche.

- An in-depth news feature was produced by the Skeena Journal on Terrace's local television station to provide information on the program and tips for safe northern travel in the winter months. Similar stories were featured in the Terrace and Stewart newspapers and on Kelowna's television station.
- Road closure information due to avalanche and other hazards was provided from the North West Region radio room to hotels, radio stations, emergency units, trucking companies and community meeting points in the North West.

Emergency Response Planning A formal response plan was developed to cue maintenance crews and ministry staff on their roles and responsibilities in event of road closures due to floods, rockslides or earthquakes to set a standard that ensures the public trust and safety is protected.

Further, an Emergency Communications Plan was developed to makes sure the media and public receive accurate, prompt information on road closures and the ministry's mobile radio system was improved to help maintenance contractors and ministry staff respond quickly to emergency situations:

- Several mountaintop mobile radio repeaters were relocated to get better coverage of the contract areas;
- Others were relocated and power supplies changed for more reliable operation during the winter; and
- Seven remote meteorological radio repeating stations were installed along Highway 37 for the Snow Avalanche Section, Maintenance Branch.

Sea-to-Sky Rock Stabilization Program To increase highway safety and reduce long-term maintenance costs, early 1991 the ministry embarked on a five year, $3,500,000 slope stabilization program on the Sea-to-Sky Highway between Horseshoe Bay and Squamish. Two projects each year, in the spring and fall will include:

- Scaling broken rock and debris from slopes;
- Removal of trees;
- Drilling and installation of rock bolts to stabilize potentially unstable rock;
- Drilling and blasting of loose rock;
- Installation of steel meshing over to rock slope to direct smaller rockfalls into ditches along the highway; and

- Drilling and installation of drains along the base of the slope to improve overall stability.

Necessary road closure times were chosen in consultation with the municipalities of Whistler and Squamish and the Whistler Resort Association.

Sea-to-Sky Short-Term Accident Prevention In response to public and media concerns that the Sea-to-Sky Highway was a "dangerous" road, a committee of officials from interested agencies was established including the RCMP, the Insurance Corporation of B.C. and the ministry's Director, Highway Safety Branch.

The committee evaluated the safety performance of the highway to determine short-term improvements (for details on ministry long-term plans for this route see Major Projects Section).

As a result, a 28 km section commencing 20 km north of Squamish was identified as an "accident-prone" location and centreline reflectors and delineator posts were installed on the section spring 1991. Initial reaction was favourable; however, it is too early to assess the safety effectiveness of these devices.

Colour Blind Drivers Research Phase one of research to provide direction on signal light improvement for colour blind drivers has been completed including literature review, shape-coded signal lights survey, and questionnaire survey. A photographic approach for measuring the ability to identify signal light and phase was also developed and tested.

Findings indicate there are losses in visual function with age so the potential target group is much larger than anticipated. A second phase study next year will use an improved photographic approach to evaluate alternative signal-control design that would assist colour deficient drivers.

School Safety Programs

- The South Okanagan District worked closely with the Parent Advisory Group to alleviate child-safety concerns on Berry Road. As a result, the ministry constructed a walkway for school children along Berry Road and installed an overhead flashing beacon.
- Shoulder widening on Lebourdais Walk Way, two kilometres north of Quesnel on Quesnel-Hixon Road provided a safer route to school.
- In the East Kootenays, the construction of school bus and mailbox pull-outs, as well as widened road shoulders, improved safety for school children.

- The North Island District continued liaison with school districts resulting in shoulder widening and paving, filling and culverting ditches, painting of school crosswalks, and sidewalks incorporated into design on two rural bridges to provide a safe route to schools.
- The first "Hearing Impaired Child" warning signs in the province were installed in rural residential areas outside of Courtenay along two school routes used by hearing impaired children.
- In the Lower Mainland, the "Traffic for Kids" safety program visited about 75 schools and 3000 children this year. The Electrical District is now working on a new display board for fall 1991.

Kamloops Freeway Study

The ministry, the City of Kamloops and the Interior Commercial Vehicle Safety Society formed a committee as a result of recommendations from the coroner's inquest jury on the Columbia Street truck accident.

In September 1990, they retained McElhanney Engineering Services Ltd. to do a planning study of the Trans Canada Highway from the Copperhead Interchange to the Highway 5 Interchange. The committee and the public reviewed the results in February 1991.

Safety improvement recommendations include:

Short term *(all short-term improvements must be compatible with long-term plans for the freeway)*:

- A collector-distributor road from Highway 5A to Columbia Street should be built to separate the high volume of local commuter traffic from the freeway and to provide additional sight distance for the freeway exit to Columbia Street. This requires changes to signing.
- A brake check area for eastbound trucks on the freeway at the existing weighscale facility and upgrading the existing brake check, on Highway 5A south of Kamloops, was recommended to enhance the safety and encourage brake checks.
- Lighting on the freeway between Summit Drive and the Yellowhead Interchange and, although not standard practice, for the runaway lane on the freeway, west of the Yellowhead Interchange.

Long-term:

- Right-of-way protection for the extension of Hillside Drive to Summit Drive and Battle Street; and re-evaluation of the Sixth Avenue extension to Summit Drive and Notre Dame.

Other Projects to Improve Safety Accident-prone locations throughout the province have been identified from the Highway Safety Branch accident data base and input from region and district offices. Through a budget allocation process based on factors including accident frequency and severity $2 million was distributed to improve the safety on provincial highways.

Ongoing and specific safety projects include:

- The sum of $1 million was spent to install median and roadside barrier on provincial highways.
- The Yellow Arrow Clearance Program continues to be implemented on traffic signals under the ministry's jurisdiction.
- To enhance safety and efficiency of traffic flow through an active avalanche area, $3.3 million was spent this year on realigning 27 kilometres of Highway 97 Pine Pass. Work carries on next fiscal year.
- In the Nechako District, with the co-operation and funding support of C.N. Railway, a 70-year-old safety and access problem for the travelling public was solved. Corporation Street in Fort Fraser now crosses the C.N. tracks at right angles with an improved grade and sight visibility. An additional benefit was the improvement of the intersection at Dock Avenue.
- In Burns Lake, the Hawes bridge was replaced with a new timber structure to ensure safety.
- The sight distance to the approach of the Yoho Bridge in the Kootenays was improved and flared concrete barriers were installed on bridge approaches to alert drivers of upcoming bridge. In the same area, while resurfacing Highway 3A, the ministry paved the shoulders to make the road safer for cyclists.
- On Vancouver Island, the shoulders on Highway 19 were paved from the pulp mill north of Campbell River to Race Point Road (6.8 kms) and in the Port McNeil area to ensure pedestrian and cyclist safety.
- In co-operation with Highway Safety Branch, the Howe Sound District installed test sections of recessed centreline reflectors and roadside delineators at non-standard spacing. Tests results should be available in 1991-92.
- The South Okanagan District completed a project funded by headquarters Safety Branch; placement of a specially designed median barrier on Highway 3 East of Osoyoos at a location known as Anarchist Lookout to address a potential safety hazard of cars moving into the oncoming lane on a sharp curve.

Important as our transportation network is to the economy of the province, it's British Columbia's natural beauty that contributes most to our quality of life. That is why the ministry makes sure that road and bridge building and maintenance create the least possible impact on the environment.

Two special sections within the ministry work with nature:

- Environmental Services, to develop ways to protect our fish and wildlife as well as our environment; and
- Roadside Development, to develop landscaping procedures that preserve and enhance our natural surroundings.

Plus, all sections continually seek out and promote environment-friendly alternatives.

Go Green The ministry is a key sponsor of the "Go Green" program in the Lower Mainland to encourage transit use, carpooling and parking your car and walking.

Go Green is more than an educational program. It is part of the ministry's direction for the provincial road system in the Lower Mainland — to encourage the use of alternative transportation.

This fiscal year, the ministry initiated its first "Go Green", High Occupancy Vehicle (HOV) project: the Barnet/Hastings People Moving Project (see Major Projects section) When completed in 1994, commuting time for transit users and carpoolers between Coquitlam Centre and downtown Vancouver will be reduced by 20 minutes.

Preserving our Heritage Landscape design is now included in the design of every project to preserve the natural heritage that attracts visitors to this province.

A new ministry landscape policy was adopted together with landscape standards applicable to rural, suburban and urban conditions along highway right-of-way. That means that any project, no matter how small or where it is located, will be landscaped according to the same standard.

A Manual of Aesthetic Design, which addresses landscape and aesthetic matters related to all highway design projects, is scheduled for release fall 1991. The result will be road and bridges that are built to conform to the natural surroundings and look as good as they perform.

Working with Nature All highway and bridge projects, from the planning phase to and including the construction phase, are screened by environmental agencies. The ministry frequently undertakes environmental studies working with independent experts (biologists, land use specialists, hydrologists, etc.) and to identify, for example:

- Highway corridors or bridge crossings with the least impact on the environment;
- Sensitive areas and habitats of wildlife and fish; and
- Ways to protect nature from the impact of construction.

A total of 120 environmental studies were undertaken this fiscal year.

Plus, a Provincial Salt Study was initiated early in 1991 to investigate the decline of roadside vegetation at 17 sites along our highways. The study is being conducted in association with the Ministry of Environment and will be completed in 1992. Ministry environment protection works in 1990/91 follow.

Vancouver Island Highway A team of 11 environmental specialists assessed construction impacts and evaluated corridor alignments and river/creek crossings.

Protecting fish resources was the main concern with 67 rivers and streams all having highly-valued fishery resources. However, the Nanaimo Inner Route and Victoria Approaches studies focus on recreational issues and minimizing community disruption, noise levels, land-use conflicts and the impact on agricultural operations.

One protection measure identified this fiscal year: all bridge structure designs will be lengthened. This results in a significant cost increase to bridge construction but saves the cost of implementing fish habitat protection measures and provides passage for wildlife.

Okanagan Connector With the Okanagan Connector open to the public on October 1st, 1990 a fifth year of wildlife studies will determine the effectiveness of the wildlife protection program: 160 km of special fencing with more than 300 one-way gates to prevent wildlife collisions; and 18 underpasses and an overpass placed strategically to maintain wildlife movements.

Since the highway opened, more than 30 deer have used the overpass and more than 300 deer and moose have used one of the largest underpasses. Increased usage is expected over time.

The fencing has worked well, but requires a maintenance program to ensure no openings in the fence exist; caused by erosion, falling trees or humans.

The water quality studies of the highway runoff in Trepanier Creek continue to ensure no metals or any other contaminant affects the municipal water supply.

Jack Creek gravel pit and other property no longer required for highway construction purposes, have been reclaimed for use by wildlife and transferred to B.C. Environment to protect deer winter range.

Fraser River Crossing and Connections Work continues to assess construction impacts on fish and fish habitat.

The final year of monitoring upstream sockeye salmon was completed. It was concluded that adult salmon had no problem negotiating passage between the bridge pier protections.

The final year of assessment is under way on the back channel habitat created to replace low velocity areas lost due to bridge construction. As in past years, this site provides one of the most productive areas on the river for migrating juvenile salmon. However, it was found that slope stability and revegetation was needed.

Future work also includes the design and construction of an embankment habitat area behind the south pier protection island. This habitat will formally provide a two-to-one replacement of habitat as required under the Fisheries and Oceans, Canada "no net loss" policy.

South Coast Region

- During construction on Morris Valley Road a coho pond in the Chehalis River was enhanced and monitored to assess its effectiveness. The new habitat was found to produce an increase in adult spawning and juvenile rearing over 1989. In 1991, final revegetation will be done and monitoring will continue.
- The Whonnock pit at Hope was made to provide gravel for road construction in the area but was designed to create a 60,000 m back channel for juvenile salmonid use on the Fraser River once the pit is no longer necessary. This is to compensate for encroaching into the river when widening the Trans Canada Highway.
- The final year (fourth season) of assessing impacts of the Coquihalla on Coldwater River was conducted. The data will provide insights into use of created fish habitats and the effect of encroachments on instream sites.

Thompson/Okanagan Region

- In the Okanagan Valley, an endangered species of turtle lives in a pond by an existing route. With the Nature Trust of British Columbia, a program to ensure the survival of this species is being designed as part of a nearby upgrading project on Highway 97.
- A number of roadside reclamation projects were initiated which included planting of native plant species on slopes in the Okanagan, seeding wildflowers on Highway 97, and analysis and monitoring native plantations at a reclaimed gravel pit.

Kootenays Region

- An additional 4,000 reflectors for preventing wildlife collisions were installed on the Kootenays provincial highways. Vehicle — wildlife collisions have been reduced by 60 to 80 per cent where reflectors have been installed.
- In the Selkirk District fencing was constructed along 2.06 km of Kootenays Columbia Highway to keep livestock off the road.

Central/North East Region

- Shore protection of Dome Creek on Old Dome Creek Road, off the Yellowhead Trans Canada Highway, was completed to preserve the existing creek channel and fish habitat. Stone Creek bridge clean-up and rip-rapping was carried out for shore protection too.
- A new bridge to be constructed on the north shore of Fraser Lake, where Stella Road crosses Armond Creek, meant the creek bed had to be moved. With approval from environmental agencies, the creek was moved, its banks rip-rapped and trees and shrubs planted to create a fish habitat. The ministry will monitor growth of the flora and enhance it if necessary.
- Reconstruction of Chimney Lake Road threatened the habitat of groundhogs who lived beneath a huge rock along the main road. Resident Marguerite Court asked work crews to save the rock and the ministry obliged. The new road was given the name "Groundhog Place" and the groundhogs were no worse for wear when construction was completed.
- Fish baffles were installed in a multiplate culvert when Whites Landing Bridge was replaced on Plett Road 80 kilometres north west of Quesnel.

North West Region

- Collecting data on fishery resources, use of habitat and the impact of highway widening is all part of the Highway 16

widening project at 31 Mile along the Skeena River to provide a measurement of the effect of road construction and the need for any mitigation work.

- For the third year, consultants monitored and planted marsh vegetation on the Skeena Estuary which was created to compensate for the encroachment of Highway 16 when it was widened. Vegetative growth was significant and the area is now providing rearing habitat for juvenile salmon and shore birds.
- Maintenance work was conducted on the Burns Lake Trestle Bridge. To lessen the impact on the public and protect the environment, an innovative process that involves spraying hot metal onto the bridge was used (metallizing) to prevent corrosion and a temporary tent-like shelter was erected to prevent fallout from contaminating the area.
- This year, a gravel pit for a Highway 16 project west of Terrace, which is now completed, was made into a rearing habitat for fish that use the Skeena River. Studies in early spring 1991 indicate at least 5,000 fish, mainly juvenile coho, over wintered in this site. In 1991, to increase productivity more food sources and cover (planting trees and placing shrubbery along the banks) will be provided.

Vancouver Island Region

- This region performed hydroseeding and fertilizing on all highway projects, planted wildflowers on the Gulf Islands and throughout the Districts and moved a turnaround area on Pender Island to save a park.
- In response to Cortes Islanders' concern for environmental safety, the region chipsealed extra roads instead of using chemical dust palliatives. Even though studies prove palliatives are safe, the effort and cost was justified to satisfy Island residents' concerns.
- In the Duncan area, near Somenos Marsh, median barriers dividing Highway 1 were replaced with ones that had built-in water ducts to allow ducks and their ducklings to pass through in an area where ducklings were continually getting stranded on the highway. Crews also cleaned up an underpass and helped to fence the Highway near the marsh in an effort to keep ducks from crossing the road.

NEW MATERIALS AND PROCEDURES

Testing is ongoing to find and develop new materials and procedures that:

- Cost less;
- Create less waste; and
- Enhance the effectiveness of the provincial road system.

This year, the ministry implemented a number of initiatives to create a more efficient, cost-effective transportation system.

Roadbuilding

- Evaluation of thermally sprayed thermoplastic material for use on roadside structures such as concrete barriers continues. The material has the potential of lowering maintenance costs as it will increase corrosion resistance.
- Trial field tests continue to assess the use of plastic fibres instead of steel fibres in the concrete mix for concrete barriers. This will reduce the cost of barrier construction.
- The use of Geotextiles during road construction was successfully used on Hutton Road in the Central/North East Region to reduce the quantity of base strengthening aggregate.
- Trucks are getting bigger, the number of trailers being hauled are increasing and turning axles are changing. A computer program that generates scale plots of vehicle sweep paths has been developed to simulate the turning configuration of these new vehicles and provide design engineers and regulatory authorities an efficient tool to assess their impact on the existing and future road network. The program has drawn interest from transportation planning engineers across North America.
- In a move to develop and market products with private industry, the ministry has entered into an agreement with a Canadian company to market BC Stabilizer — a patented ministry invention that provides for the economical stabilization of low quality gravels. In return, the ministry receives a fee based on units of materials constructed.

Bridges

- Trial field tests continue into the effectiveness of steel fibres in the concrete mix used in bridge re-decking.
- Test sections were placed on the Nanaimo River Bridge and the Cranbrook East Overhead Bridge to evaluate a new type of quick curing concrete.

Electrical

- The ministry initiated the design of a standard traffic control system that will simplify the training, inventory, operation and maintenance of the electrical equipment resulting in reduced costs and increased safety.
- Research into new technologies and equipment was done for future development of a Freeway Traffic Management System, including fibre optic communications systems. These systems will enable the ministry to reduce congestion, maximize efficiency and increase safety of freeways using ramp metering and high occupancy vehicle (HOV) lanes.
- The ministry's first traffic-responsive, traffic light system was designed and implemented in Duncan. This project used B.C. industry technology and materials and results in a stronger, more accident-resistant structure that controls traffic flow better as it responds to traffic demand rather than a timed signal.
- The Provincial Changeable Message Sign System was upgraded with a new central control system in Burnaby to accommodate new signs being installed at Sumas-Prairie and make the operation of the signs easier for control centre personnel, particularly when emergencies arise.

Procedures

- The Selkirk District completed planning for a radio system that informs the public within 1.5 kilometres of Revelstoke of traffic interruptions in the area and delays on the Shelter Bay-Galena ferry. The District also constructed a changeable message sign to inform westbound traffic leaving Revelstoke of approaching highway conditions.
- A computer simulation model was designed to test toll booth designs and layout schemes to minimize peak demand delays. This simulation was effective in testing ideas before expensive plans and construction schedules were made.
- What types of vehicles use the road system, how fast are they going, what are their weights and their lengths; these are some of the critical questions to answer if the public is to be served with an effective road system. This fiscal year, the ministry

began to set up new high-technology traffic monitoring equipment to answer these questions for planners, design engineers, and safety engineers. This system will take a number of years to fully implement.

- Economic Analysis Guidelines are being developed that will assist in the decision of where best to allocate funds for all capital improvement projects, large or small. By assessing the full economic impact of construction projects is essential so the public receives the best value for its tax dollar.
- Upgrading of material testing and procedures manuals was completed so now new products can be selectively introduced into highway construction or maintenance programs to reduce costs without sacrificing quality.
- A need for a system to get the best lifetime cost for road rehabilitation (such as whether to repave, recycle the pavement, or continue to patch a section of road) initiated research and development of a Roadway Pavement Management System (RPMS) this year.

WORKING WITH THE COMMUNITY

Operations were decentralized, public information officers placed in the regions, and a formal public consultation process was implemented, all to allow the ministry to work closer with the public.

PUBLIC CONSULTATION

Consultation with the public to direct project planning and development is critical to the ministry. That is why a formal consultation process was designed last year and improved this year. Following are examples of public consultation in action.

- Public consultation in Salmon Arm for the Hospital Road to Highway 97B widening project resulted in a commitment by the ministry to upgrade 11th Avenue N.E. from 18th Street N.E. to ensure traffic flow is safe, controlled and away from residential streets as well as to construct pedestrian underpass structures at 14th Street N.E. and 21 Street N.E.
- In the North Island District, regular traffic advisory meetings with municipalities and RCMP resulted in implementation of improvement items such as speed zone changes, signal light timing, crosswalk installations and special signing.
- The Fort George Highways District developed a Rehabilitation Management System (RMS) to help establish an annual and five-year road upgrade program based on criteria such as traffic types and volumes, safety concerns and accident records. Local officials are then given this information so they may be better informed and able to answer resident concerns.
- The Nechako District meets regularly with interested Chambers of Commerce, tourist groups, tax payer associations and other local organizations to keep them informed and invite their feedback on services such as maintenance and rehabilitation.
- Corridor study findings for several communities in the North West Region were presented to and discussed with the appropriate city councils and regional districts.
- After the Islands Trust and Capital Regional District cited traffic concerns in Ganges, Saltspring Island, a design deficiency study involving a high degree of community consultation evolved a program of improvements.
- The Barnet Hastings People Moving Project, (see Major Projects section) broke new ground in public consultation. The engineering firm hired to design the project included a comprehensive consultation program, implemented in partnership with ministry staff, that provides early contact, clear definition of potential for changes, strong presence in the community and with media, and a commitment to listen to the public.

The program relies on conventional information drop-ins and a community project office and adds: facilitated small group meetings with residents and special interest groups, door-to-door interviews, workshops, media briefings and distribution of newsletters and information packages.

Major benefits have been avoidance of redesign costs and delays, strong general public support and confidence as well as a balance between community and individual interests.

THE MINISTRY IN THE COMMUNITY

Ministry staff take pride in helping the communities in which they live:

- Severe flooding in the North Island District fall 1990, required immediate help from district staff to (with local logging companies) provide detours for washed out bridges and sandbags to residents, and to redirect water and replace accesses. Working with public fisheries, environment agencies and municipalities, drainage improvement plans were also implemented.
- Cortes Island logging operations removed a semi-public boat launch. The ministry donated rock blasted during road improvements to the Regional District for new boat ramp construction.
- June 1990, Stone Creek, south of Prince George on Highway 97, flooded and destroyed three homes and a bridge approach. A log house was damaged but salvageable. ministry staff restored the stream to its banks, backfilled and built a berm to protect the log house, restored the road surface and repaved. Local residents, especially log home owners, were pleased with the cleanup and road users enjoyed smoother, safer bridge approaches.
- The ministry participated in a number of local fairs to raise awareness of projects planned and under way in the community. For example, Bulkley Nass District staff took part in the Smithers Fall Fair and South Coast Region/Lower Mainland District employees in the Vancouver International Automobile Show and the Pacific National Exhibition.
- North Peace District began production on a provincial government services directory: a reader-friendly booklet/brochure to provide the public and other government departments a quick reference to local services. It will be published in 1991/92.

- November 1990, Fraser Valley District had a one-in-two-hundred-years flood that caused road closures and damage in 48 locations in the district. ministry staff immediately affected repairs around the clock and, in cooperation with the Provincial Emergency Program, established a program to repair and protect roads and structures to be completed fall 1991.
- August 1990, PNE staff asked for assistance in obtaining additional parking spaces for the exhibition as some 2,100 parking spaces were lost due to the Cassiar Connector project. The ministry immediately initiated a new highway right-of-way, south of Hastings, between Pender and Napier to provide temporary parking for 1,500 vehicles.
- Fall 1990, the Howe Sound District dealt with a major rock slide on Highway 99 at Loggers Creek, north of Horseshoe Bay that shut the highway for 13 days — the longest road closure in 10 years. It required 3,800 manhours around the clock to clear and stabilize.

Porteau Cove Emergency Mooring Facility/Park Enhancement Program The first major closure of Sea-to-Sky Highway 99 in ten years seriously affected economic ties between Vancouver and Squamish and Whistler. To maintain this vital link, the ministry (together with the BC Ferry Corporation, BC Parks and the Ministry of Environment) is constructing a ferry mooring facility for a 360-car ferry.

This facility will incorporate new recreational facilities for divers, windsurfers and pleasure boaters and will only be used to connect the communities along Highway 99 to Horseshoe Bay in the event of emergency road closures. Public input will be sought before design is finalized. Project completion is expected winter 1991.

HELPING COMMUNITIES BUILD THEIR SYSTEMS

Municipally operated transportation systems and infrastructure, though they are not under the jurisdiction of the ministry, are still a vital part of the provincial network. That is why the ministry continues to support communities around the province to:

- Build and develop community airports;
- Develop and maintain as well as beautify their arterial and secondary road systems; and
- Build or restore municipal bridges.

The Air Transport Assistance Program The provincial Air Transport Assistance Program was implemented in 1978 and each year provides funding contributions for capital improvements at British Columbia Community Airports.

In 1990/91, ATAP provided assistance totalling $3,598,786 to 24 community airports for projects such as:

- Construction of helipads at Port Simpson, Kincolith and Metlakatla, the second phase of an eight community network of helicopter medivac landing pads in the Prince Rupert area;
- Completion of a new airport at Bob Quinn Lake on Highway 37, already proving a vital link in air freight movement supporting resource developments in the area;
- Continued work on a new airport at Port Alberni;
- A non-directional beacon (NDB) at the new Masset Airport;
- Paving at several sites including Anahim Lake, Alert Bay, Langley and Trail;
- Rehabilitation works such as crack sealing at Burns Lake, Creston and Nanaimo; and
- Several engineering and airport planning studies including Atlin, Fraser Lake, Fort St. James and Tumbler Ridge.

ATAP also produced and distributed the "British Columbia Community Airports Manual" designed as a guide to assist airport owners/operators in the management, maintenance and operation of their Community Airport.

For a detailed list of all projects supported by ATAP see Appendix H.

Arterial Highway Beautification — Community Participation Program
The Ministry of Transportation and Highways provides cash grants to local agencies and community groups for the beautification of arterial roads through their communities. The grant funds are provided for the purchase of trees, shrubs, bulbs, and grass seed for planting along arterial highway right-of-way.

This fiscal year the ministry distributed $73,317.78 in grant funds to the following communities:

Grant Funding

Village of Warfield	$4,770.00
City of Courtenay	$2,798.40
Fernie	$4,000.00
Village of Fort St. James	$7,000.00
City of Nanaimo	$3,023.00
City of Trail	$16,402.40
Prince George	$2,849.14
Town of Smithers	$5,873.25
City of Merritt	$2,800.00
City of Cranbrook	$15,000.00
Village of Lake Cowichan	$1,309.64
Village of Salmo	$7,491.95

Secondary Highway Program This program provides funding support for upgrading and maintaining municipal road systems that serve as major transportation routes through a municipality — classed as secondary highways. Throughout the province, there are approximately 105 secondary highways within 62 municipalities.

Under Part 3 of the Highway Act, municipalities are entitled to 50 per cent of capital construction costs and 40 per cent of maintenance costs (75 per cent for both capital and maintenance in a municipality with a population under 1,000).

The ministry assisted 59 municipalities with approved funds totalling $4,719,068 through this program in the 1990/91 fiscal year; $4,004,987 for construction and $714,081 for maintenance.

Revenue Sharing Program Under the Roads section of the Revenue Sharing Program, administered and funded through the Ministry of Municipal Affairs, Recreation, and Culture, the Ministry of Transportation and Highways carried out the technical review of 162 applications totalling $98 million worth of work. Of the 162 applications reviewed, only 67 were recommended for approval in the amount of $15 million, (representing the province's 50 per cent share of the project costs).

New Incorporations and Municipal Restructures In support of newly incorporated municipalities or municipalities extending their boundaries and assuming responsibility for part of the provincial road system, the ministry provides funds to assist in maintenance and reconstruction of roads and bridges before turning them over to the community.

The ministry assisted ten municipalities this fiscal year with approved funds totalling $3,122,151.

New Incorporations and Municipal Restructure Grants

Municipality	Maintenance ($)	Capital ($)
Abbotsford/Huntingdon	15,000	
Anmore	15,500	
Colwood	36,250	
Kelowna — East Kelowna Road	140,000	
Kelowna (urban/rural)	1,919,199	
Oliver	94,006	
100 Mile House	117,725	
Parksville	17,934	
Qualicum Beach	92,882	
Radium Hot Springs	116,073	
Sechelt	179,000	
Sicamous		378,582
Total	**$2,743,569**	**$378,582**

Bridge Assistance Contributions

This program assists communities in the cost of building, rebuilding or repairing any bridge on any street within an incorporated area, providing the work is considered emergency in nature.

The ministry assisted six municipalities this fiscal year with approved funds totalling $5,905,865.

Bridge Assistance

Municipality	Bridge	Funds ($)
Richmond	Dinsmore Bridge	4,500,000
Kamloops	Overlander Bridge and Fortune Drive Overpass	781,293
Quesnel	Johnston Bridge	282,393
Campbell River	Quinsam River Bridge	77,208
Kitimat	Haisla Bridge	211,910
Prince George	Cameron Street Bridge	53,061
Totals		**$5,905,865**

INLAND FERRIES

The ministry is responsible for 16 freshwater ferry routes in the province which provide an integral link in the province's transportation network.

The freshwater fleet consists of seven certified vessels, six reaction ferries, four aerial ferries (for winter use) and four cable ferries as well as tugboats and barges that carried more than 5.55 million passengers and 2.9 million vehicles this year.

Improving Service on the Arrow Lakes Route

- A new 40 vehicle 150-passenger cable ferry went into service on the Needles/Fauquier route on the Arrow Lakes in the Kootenays. With a cable of 5,000 feet, "Needles" is the largest ferry on the longest cable in North America.
- The MV "Shelter Bay" was put on the Shelter Bay route as an additional vessel in heavy traffic periods.

Saving Money and the Environment The MV Klatawa and MV Kulleet on the Albion to Fort Langley inland ferry routes were converted to natural gas/diesel in 1986 and 1988 respectively. Studies show:

- Engine exhaust emissions and sound levels were reduced.
- On inspection of the MV Klatawa, its engines were found to be in excellent condition following 32,000 hours of continuous service, better than those operated entirely on diesel fuel for 15,000 hours.
- The investment to convert the MV Klatawa will be recovered 2.3 times over after 20 years of operation.

In response to customer demand, Albion Ferry service was extended from a 22 1/2 hour service to a 24 hour service.

Upgrading the Francois Lake Ferry Route

- Modifications were made to shore ramps and vessel bulwarks to improve access and handle oversize vehicles.
- The MV "Omineca Princess" underwent a major structural and mechanical overhaul this year. Two emergency ferry landing/loading ramps were constructed and a new system for preventing ice formation on the main loading ramp was installed at the south bank.

Expenditures to operate and maintain the fresh-water ferries in 1990/91 was $12,553,437. Ferry routes and locations see, Appendix G.

Appendixes

APPENDIX A — CAPITAL CONSTRUCTION PROGRAM ELEMENTS

The following are Capital Construction Program elements.

- Building New Roads;
- Building New Bridges;
- Building New Inland Ferries and Facilities;
- Major Upgrading to Existing Roadways;
- Widening of Roads — Projects that widen existing roads from two to four lanes;
- Widening of Bridges — Projects that widen existing bridges to provide more than two lanes;
- Replacement of Bridges — Projects that involve the replacement of two-lane bridges with larger bridges;
- Major Paving of Existing Gravel Roads; and
- Municipal and Community Grants.

See Community Programs Section of Annual Report.

APPENDIX B — BRIDGES COMPLETED

Alger Creek	Replaced
Alki Bridge	Replaced
Ashcroft Bridge	Replaced
Beatton River Bridge	Replaced
Beaver Creek No. 3	Replaced
Blue River Bridge	Replaced
Brookmere No. 1	Replaced
Canoe Creek Bridged	Replaced
Channel Creek	Replaced
Cooper Creek	Replaced
East Pine Bridge	Rehabilitated
Engen Overhead	Replaced
Esker Overhead	New
Evelyn Creek	Replaced
Fording River	Replaced
Hagwilget Bridge	Rehabilitated
Hammond Bridge	Replaced
Hannington Bridge	Replaced
Harris Cove	Replaced
Hudson Hope Bridge	Rehabilitated
Kane Creek	Replaced
Keogh Bridge	Replaced
Marble River	Replaced
Mashiter Bridge	Replaced
Mount Hunter Bridge	Rehabilitated
Nechako River	Replaced
Osborne Creek	Replaced
Quartz Creek	Rehabilitated
Sachts Bridge	Replaced
Silver Skagit Creek No. 3	Replaced
Silver Skagit Creek No. 5	Replaced
Sutton Creek	Replaced
Station Road Overhead	New
Swan Lake Overhead	New
Tennis Court Bridge	Replaced
Wathl Creek	Replaced

APPENDIX C — REGION AND DISTRICT WORKS

Ministry Highway Works Performed in the Regions and Districts in the 1990/91 Fiscal Year

Kms of new paved road added to system	88.93
Kms of new gravel road added to system	196.12
New bridges added to system	16.00
Old crossing structures replaced	48.00
Bridges rehabilitated (improved)	56.00
Lane-kms of existing paved roads resurfaced	2,090.07
Lane-kms of existing gravel roads resurfaced	1,277.07
Kms of existing road realigned/reconstructed	114.18
Kms of new lanes added	172.90
Kms of shoulder widened	317.91
Kms of shoulder paved (not including shoulder widening)	99.50
Kms of gravel road paved	100.00

Region 1 — Highway Works in South Coast Region 1990/91

Kms of new paved road added to system	3.79
Kms of new gravel road added to system	.43
New bridges added to system	0.00
Old crossing structures replaced	3.00
Bridges rehabilitated (improved)	1.00
Lane-kms of existing paved roads resurfaced	147.78
Lane-kms of existing gravel roads resurfaced	21.16
Kms of existing road realigned/reconstructed	9.55
Kms of new lanes added	1.75
Kms of shoulder widened	1.36
Kms of shoulder paved (not including shoulder widening)	0.00
Kms of gravel road paved	1.99

Development Approval Statistics for South Coast Region 1990/91

Controlled access permits to provincial roads issued	122
Ordinary access permits to provincial roads issued	477
Rezoning applications within 800 m of numbered highways	571
Other permits for works within highway rights-of-way including utilities, pipelines, signs, parades, etc.	922
Subdivisions (Final)	98
Lots created (Final)	301

Region 2 — Highway Works in Thompson-Okanagan Region 1990/91

Kms of new paved road added to system	60.93
Kms of new gravel road added to system	27.00
New bridges added to system	6.00
Old crossing structures replaced	12.00
Bridge rehabilitated	21.00
Lane-kms of existing paved roads resurfaced	438.59
Lane-kms of existing gravel roads resurfaced	190.00
Kms of existing road realigned/reconstructed	32.10
Kms of new lanes added	156.70
Kms of shoulder widened	11.00
Kms of shoulder paved (not including shoulder widening)	16.80
Kms of gravel road paved	53.74

Development Approval Statistics for Thompson-Okanagan Region 1990/91

Controlled access permits to provincial roads issued	140
Ordinary access permits to provincial roads issued	1121
Rezoning applications within 800 m of numbered highways	335
Other permits for works within highway rights-of-way including utilities, pipelines, signs, parades, etc.	2279
Subdivisions (Final)	312
Lots created (Final)	983

Region 3 — Highway Works in Kootenays Region 1990/91

Kms of new paved road added to system	0.00
Kms of new gravel road added to system	4.96
New bridges added to system	0.00
Old crossing structures replaced	7.00
Bridge rehabilitated	8.00
Lane-kms of existing paved roads resurfaced	776.40
Lane-kms of existing gravel roads resurfaced	29.11
Kms of existing road realigned/reconstructed	12.51
Kms of new lanes added	.95
Kms of shoulder widened	7.85
Kms of shoulder paved (not including shoulder widening)	0.00
Kms of gravel road paved	.99

Development Approval Statistics for Kootenays Region 1990/91

Controlled access permits to provincial roads issued	65
Ordinary access permits to provincial roads issued	393
Rezoning applications within 800 m of numbered highways	68
Other permits for works within highway rights-of-way including utilities, pipelines, signs, parades, etc.	669
Subdivisions (Final)	137
Lots created (Final)	219

Region 4 — Highway Works in Central/North East Region 1990/91

Kms of new paved road added to system	14.60
Kms of new gravel road added to system	23.11
New bridges added to system	5.00
Old crossing structures replaced	7.00
Bridge rehabilitated	5.00
Lane-kms of existing paved roads resurfaced	394.10
Lane-kms of existing gravel roads resurfaced	838.90
Kms of existing road realigned/reconstructed	50.62
Kms of new lanes added	4.35
Kms of shoulder widened	2.30
Kms of shoulder paved (not including shoulder widening)	8.08
Kms of gravel road paved	.99

Development Approval Statistics for Central/North East 1990/91

Controlled access permits to provincial roads issued	71
Ordinary access permits to provincial roads issued	410
Rezoning applications within 800 m of numbered highways	64
Other permits for works within highway rights-of-way including utilities, pipelines, signs, parades, etc.	604
Subdivisions (Final)	93
Lots created (Final)	155

Region 5 — Highway Works in North West Region 1990/91

Kms of new paved road added to system	8.00
Kms of new gravel road added to system	96.50
New bridges added to system	5.00
Old crossing structures replaced	10.00
Bridge rehabilitated	16.00
Lane-kms of existing paved roads resurfaced	116.20
Lane-kms of existing gravel roads resurfaced	191.40
Kms of existing road realigned/reconstructed	5.70
Kms of new lanes added	9.20
Kms of shoulder widened	8.00
Kms of shoulder paved (not including shoulder widening)	69.20
Kms of gravel road paved	35.20

Development Approval Statistics for North West Region 1990/91

Controlled access permits to provincial roads issued	64
Ordinary access permits to provincial roads issued	268
Rezoning applications within 800 m of numbered highways	56
Other permits for works within highway rights-of-way including utilities, pipelines, signs, parades, etc.	266
Subdivisions (Final)	34
Lots created (Final)	63

Region 6 — Highway Works in Vancouver Island Region 1990/91

Kms of new paved road added to system	1.60
Kms of new gravel road added to system	44.12
New bridges added to system	0.00
Old crossing structures replaced	9.00
Bridge rehabilitated	5.00
Lane-kms of existing paved roads resurfaced	217.00
Lane-kms of existing gravel roads resurfaced	6.50
Kms of existing road realigned/reconstructed	3.70
Kms of new lanes added	0.00
Kms of shoulder widened	45.10
Kms of shoulder paved (not including shoulder widening)	11.20
Kms of gravel road paved	0.00

Development Approvals Statistics for Vancouver Island Region 1989/90

Controlled access permits to provincial roads issued	130
Ordinary access permits to provincial roads issued	1134
Rezoning applications within 800 m of numbered highways	492
Other permits for works within highway rights-of-way including utilities, pipelines, signs, parades, etc.	1151
Subdivisions (Final)	377
Lots created (Final)	1003

APPENDIX D — REHABILITATION PROCEDURES EXPLAINED

The following are elements of the Ministry of Transportation and Highways rehabilitation program:

Roads

Resurfacing — the application of a new layer of asphalt pavement over an existing road structure.

Recycling-Heater Profile — this is a process relatively new to the industry, developed in British Columbia, to restore the existing asphalt surface to its smooth original shape. The top 5 cm of surface cement and up to 10% new granular material, then relayed onto the road.

Sealcoating — this is an effective means of extending the life of asphalt pavement and former gravel road surfaces. Surface seals improve, protect and preserve asphalt pavement and make existing gravel roads into hard surface, all-weather roads. The work involves the application of sand seals, graded aggregate seals and chip seals as required. Special emulsions are applied to rejuvenate older, dried-out pavements.

Road Upgrading — the work required to increase the capacity and/or safety of an existing facility by selective localized improvement. This type of work includes shoulder widening, paving gravel roads, trucklane construction, widening one lane bridges to two, etc.

Roadside Development

Improvement of facilities (such as rest areas), aesthetics (such as highway landscaping) and safety concerns (such as erosion control).

Bridges

Earthquake Protection — the upgrading of existing bridges which were not designed to meet current earthquake codes to improve their earthquake performance.

Corrosion Protection — the re-painting or galvanizing of existing steel bridge structures and handrails.

Deck Resurfacing — the removal of the top layer of worn concrete surface and replacing with new on concrete bridges.

Structural Components — the inspection and repair/replacement of structural components due to normal aging.

Replacement — the construction of new two lane bridges to replace old two lane structures and/or placement of culvert systems to replace old systems.

Safety

Safety Projects — includes intersection improvement, general safety works (i.e., median and bridge end treatments, impact attenuators and sight distance improvements), roadside hazard elimination, school route improvements, demonstration projects (i.e., special crosswalks) and road safety education; as identified from assessments surveys, from traffic accident data, traffic counts and public input.

Fencing — Installation of suitable barriers along major highways to restrict the access of livestock and wildlife.

Guardrail and Median Barrier Installation — Placement of devices to contain and/or divert any errant vehicle leaving the highway.

Rock Stabilization

The process by which the natural forces of erosion and stress relief on existing rock slopes are controlled to reduce the probability ofrock slides.

Electrical

The replacement or upgrading to more sophisticated signals/controllers and systems, together with new or replacement lighting and the addition of changeable message signs.

Ferries

Certification Retrofit — Ongoing upgrading of inland ferries and associated systems to comply with Canadian Coast Guard Regulation and ministry policy and standards.

Dock and Shore Facilities — Repair and replacement of piles, dolphins, ramp structures, lifting equipment and port facilities.

APPENDIX E — THE PLANNING PROCESS

Major roadbuilding projects are usually carried out over several years beginning with the planning process. The objective of the planning process is to provide a sound basis for design.

The first stage of the process looks at the overall area to identify transportation corridors (both existing and potential) and routes within the corridors. This stage can take more than 12 months to carry out and includes:

- Transportation Needs Assessment — to determine which modes of transportation will best serve the public's needs and which type of highway can best deliver the required function safely and efficiently;
- Terrain Studies — to establish the best options considering geography and cost;
- Road Networks Evaluation — to ensure existing and future provincial and municipal routes will interact well with (and within) a given corridor;
- Environmental Impact Assessments — conducted in cooperation with the Ministry of Environment using private companies to study impacts on fish, forests, wildlife, water quality, and vegetation, etc.;
- Land-Use Studies — to ensure the best use of the land with as little impact as possible on the environment and that future changes in land use will not adversely affect the transportation system; and
- Public consultation — assists to identify and address public concerns as well as choosing a corridor that will impact as little as possible. Once a corridor has been identified, preconstruction planning and design begin. This usually takes an average of six to eight months, depending on the size of the project. It includes:
- Survey of alignment;
- Soils investigation;
- Survey of local construction materials;
- Drainage plans;
- Planning to accommodate specific demands (e.g. shopping centres);
- Further studies and design for environmental mitigation measures;
- Property negotiations;
- Highway design, including alignment, laning, intersections, etc.;
- Structure design including bridges, interchanges, retaining walls, etc.;
- Scheduling and staging of work;
- Cost estimates;
- Preparation of contract documentation; and
- Tender calls.

Once a contract is awarded, construction soon follows.

APPENDIX F — LIST OF MAINTENANCE SERVICES

Surface Maintenance

Highway pavement patching
Highway surface treatment
Pavement crack sealing
Gravel surface grading
Dust Control/stabilization
Highway surface gravelling
Highway shoulder maintenance
Road base maintenance
Pavement surface cleaning
Rock and Debris Removal
Highway structures maintenance
Minor pavement line marking
Curb and barrier maintenance

Drainage Maintenance

Ditch and water course maintenance
Drainage appliance maintenance
Streambed and bank maintenance

Winter Maintenance

Highway snow removal
Winter abrasives and de-icing application
Roadside snow and ice control
Weather monitoring services
Highway condition reporting services

Roadside Maintenance

Roadside mowing
Roadside brushing
Roadside litter collection
Rest area maintenance
Roadside landscaping maintenance
Roadside fence maintenance

Traffic Maintenance

Sign and delineation maintenance
Highway traffic control
Highway traffic patrol
Movable bridge opening
Bridge/tunnel monitoring services

Bridge Maintenance

Bridge wearing surface maintenance
Bridge structure cleaning
Bridge drain and flume maintenance
Bridge joint maintenance
Bridge bearing maintenance
Bridge dolphin and fender maintenance
Bailey/Acrow bridge maintenance
Minor bridge structure painting
Steel deck maintenance
Concrete surface treatment
Timber bridge redecking
Timber truss bridge maintenance
Timber substructure maintenance
Bridge piling maintenance
Log string bridge maintenance
Ballast, wing, crib and regaining walls
Timber surface treatment
Steel multiplates, headwalls and binwalls
Bridge railing maintenance
Movable bridge maintenance
Floating bridge maintenance
Bridge traveller maintenance
Tunnel and snowshed maintenance

Emergency Maintenance

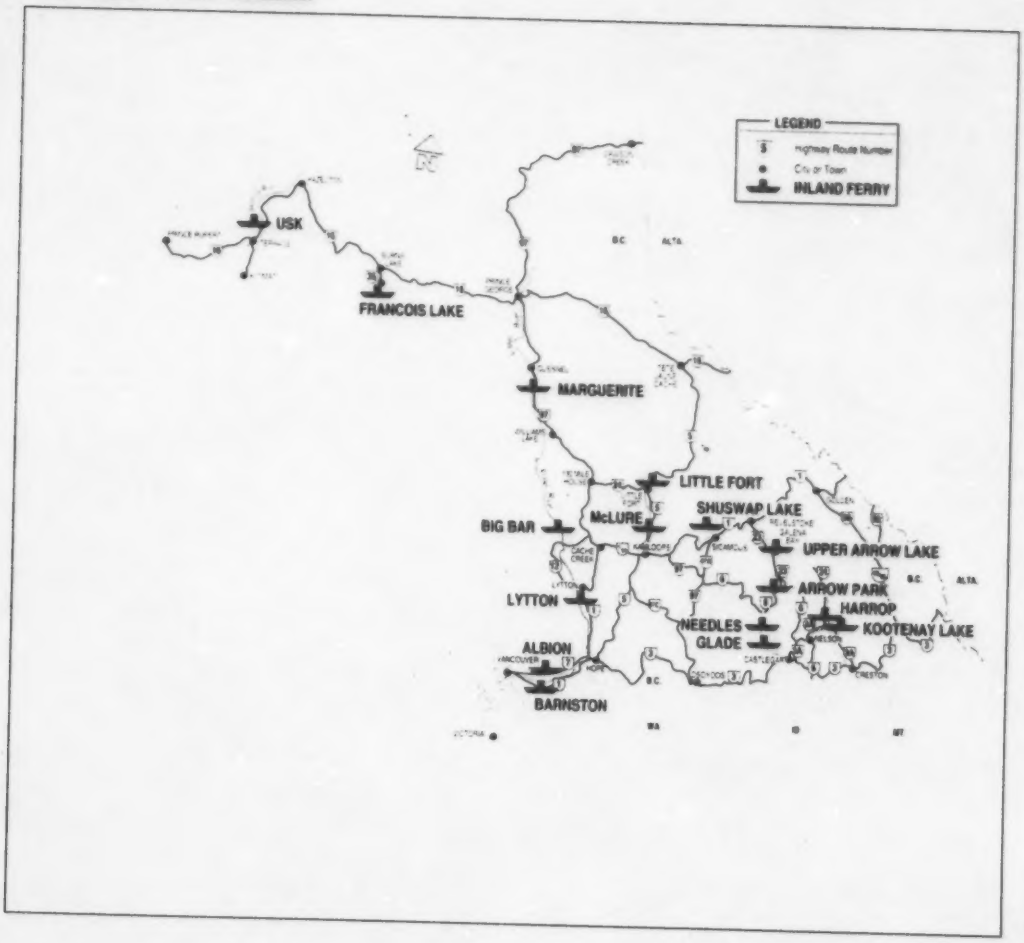
Flood control and washout response
Earth and rock slide response
Highway accident response
Snow avalanche response
Structural damage response
Bailey/Acrow emergency installation

Inspection Maintenance

Highway inspection
Bridge inspection

APPENDIX G — FERRIES INFORMATION

Ferry Routes in British Columbia



APPENDIX H — AIR TRANSPORT ASSISTANCE PROGRAM

1990/91Grant Summary

Municipality	Project	Amount
108 Mile	Completion of aviation fuel system	$40,000.00
Alert Bay	Paving rwy extension, apron & vehicle parking	78,623.40
Anahim Lake	Snow removal	3,000.00
Anahim Lake	Paving rwy extension, crosswind rwy & taxiway	100,000.00
Anahim Lake	Aviation fuel system design & feas study	11,250.00
Atlin	Paving design and engineering	25,000.00
BCAC	Operating contribution	115,000.00
Bob Quinn	Completion of airstrip construction	780,000.00
Bob Quinn	Aircraft staging area	52,977.10
Burns Lake	Crack sealing, drainage systems, snow removal equipment	28,000.00
Creston	Crack sealing	22,719.65
Fraser Lake	Paving design & eng. & airport development plan	10,312.77
Ft. St. James	Update airport development plan	10,000.00
Langley	Tree removal, helipads, paving, bury hydro lines, service road	480,600.00
Masset	NDB (non directional beacon)	84,424.06
Merritt	Runway, pavement evaluations, lighting design	92,924.06
N.Cst. Helipads	Helipads @ Pt. Simpson, Kincolith & Metlakatla	700,000.00
Nanaimo	Crack sealing, vehicle parking paving	55,684.31
P. Alberni	Runway, taxi & access road construction	500,424.06
Trail	Runway repair, extension & overlay	352,511.06
Tumbler Ridge	Lighting system & Elec. navaids design & engineering	15,000.00
Vernon	Land purchase for hazard beacons	40,335.30
Total	**22 Grants**	**$3,598,785.77**